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LONG RANGE FACILITIES
PLANNING
LONG RANGE CAPABILITIES
VOL. 11 OF V

Transportation
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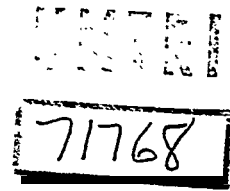


NATIONAL STEEL AND SHIPBUILDING COMPANY
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SP-1 FACILITIES PANEL PROJECT



LONG RANGE FACILITIES

PLANNING

LONG RANGE CAPABILITIES

VOL. II OF V

NATIONAL STEEL AND SHIPBUILDING COMPANY

IN COOPERATION WITH THE

DEPARTMENT OF TRANSPORTATION

MARITIME ADMINISTRATION

APRIL, 1982

LONG RANGE CAPABILITIES

Volume II

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- Alternatives for Yard Expansion
- Base and Derived Data

**LONG RANGE FACILITIES PLAN
ALTERNATIVES FOR
NASSCO YARD EXPANSION**

BY:

**L. P . HAUMSCHILT
T. S. ROACE
J. R. RUECKER**

FEBRUARY 9, 1981

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NASSCO LONG-RANGE FACILITY PLAN: EXECUTIVE SUMMARY

I. INTRODUCTION

NASSCO's facilities have been expanded and upgraded gradually over the past 15 years. Due to the constrained boundaries of the yard, this facilities growth has led to compromises in design layout and material flow. This expansion has reached the point today where NASSCO is almost landlocked and significantly overcrowded.

Before additional piecemeal. upgrading of facilities is pursued, it is. appropriate to attempt to develop an ideal long-range facilities layout plan to serve as a framework within which individual facilities improvement projects could be implemented. The intent is to enable NASSCO to better evaluate the impact of each individual facilities project as an integral step to an optimal total facilities design.

II. APPROACH

● **Premise**

An analysis has been made of NASSCO's past growth patterns. This study indicates that the operation has experienced a real growth of approximately five percent a year (see Appendix A). However, due to the highly cyclical nature of the business and its total dependence upon government support in one form or another, and the vagaries of government policy in today's environment, it is both difficult and risky to make long-range facilities plans and capital investments based solely on market projections. Consequently, it is well recognized that long-range

planning in the U. S. shipbuilding industry must be predicated upon flexibility - flexibility to cope with *three alternative* base scenarios:

- i) No growth
- ii) Contraction of the base business
- iii) Either minor and gradual or major and sudden, growth

It is the intent of this study to develop an optimum facilities plan to address the last of the three alternative future scenarios: future growth of the basic shipbuilding/ship-repair business. This study would then serve as one essential section of an overall NASSCO. long-range strategic business plan.

Objectives

Within the confines of NASSCO's existing products/markets business mix, the Long-term objectives for facilities development at NASSCO are as follows:

- i) To provide a new *ship* construction facility with the flexibility to profitably build any mix of ships from 100% commercial (crude and product carriers, bulkers, OBO's, container ships, RORO's, etc.) to 100% Navy non-combatants.
- ii) To provide facilities for increasing amounts of highly profitable ship repair work to serve as a counter-cyclical activity to new construction.
- iii) To provide, to the extent possible, flexibility for doing other-than-ship heavy steel fabrication as a counter-cyclical activity to maintain a stable workforce.

●Analysis

.It is readily concluded that additional space will be needed to cope with an additional expansion of output capacity. All possibilities of obtaining additional real estate have been evaluated; and after an initial analysis, six alternatives are deemed by management to be worthy of more in-depth study. They are as follows:

- i) Acquire Delta property adjacent to NASSCO (.3.4 acres).
- ii) Relocate main parking lot fence to "reclaim" yard area (2.1 acres).
- iii) Obtain greenfield site on water in Chula Vista (40 acres).
- iv) Acquire ITT! building (18 acres).
- v) Acquire ITT building and adjoining 20 acres of water-front (38 acres) .
- vi) Obtain 20 water-front acres adjacent to ITT building.

An inland green field satellite site alternative and a multiple small disconnected satellite site alternative were concluded early in the study to be inferior possibilities to the above six.

Given NASSCO's essentially "landlocked" condition, any alternative offering significant additional space (alternatives 3-6 above) involves a second "satellite" location resulting in a split yard operation.. This necessitates "addressing the allocation of activities between the two yards.

ŽSplit Yard Operation

For the scenarios which were investigated that resulted in a new satellite yard, the following conclusions were reached regarding the allocation of activities between the two yards:

- i) Steel:. The main yard would ultimately be used primarily for steel construction work from steel raw material storage through the launching of hulls.
- ii) Outfitting:. The majority of the outfitting work, both pre-erection outfitting of steel units and conventional outfitting would continue to be done in the main yard. Additional lay-down space for pre-out fitting would be made available by the relocation of several. shops and buildings to the satellite yard. The satellite yard would also have berths (piers or wharves) constructed. to handle increasing amounts of overflow outfitting work.

As an alternative, to give greater flexibility, the major volume of outfitting work could be transferred by stages to the satellite yard. This would reduce handling and make optimum use of pre-erection facilities available there.. This could be particularly important with the introduction of new cost-cutting and time-reducing technologies.

- iii) Repair: Initially all cepair work would be concentrated in the main yard (other than work currently performed in the Navy yard). If a major expansion in repair and conversion activity was warranted , in the absence of

any significant decline in new construction work, this work would have to be located in the satellite yard. This expansion presumably would be predicated on obtaining a large floating drydock. In this scenario, all existing main yard repair work would also be relocated to the satellite yard.

- iv) Support Shops:. The satellite yard would primarily be a support facility to the main yard. It could include the following shops which currently reside in the main yard:

Pipe Shop

Sheet Metal Shop

Electrical Shop

Machine Shop

Warehousing (both that which is currently located in main yard as well as that spread around in various outlying locations).

- v) Office Functions: A substantial portion of NASSCO's office functions could be relocated to the satellite yard. The existing engineering building would be moved to enhance material flow in the yard.

- vi) Parking: The current serious parking problems would be alleviated by the split of personnel between the two yards..

- Organization of Detailed. Report

The main body of the report presents each of the six alternatives in some detail covering the following:

- i) A description of the concept
- ii) How it would fit with current operations

- iii) A staged evaluation of the current operations to the ultimate expanded facility
- iv) The order of magnitude cost projections are based on 1980 dollars
- v) Location and site maps
- vi) Layout maps. of both yards

The Summary Section contains. a foldout spread sheet f o r handy reference when reading. the detailed report. It summarizes in comparison. format all the salient data regarding each alternative.

We do not include in the financial analyses of any of these alternatives productivity-enhancing equipment in the existing new yard such as additional platens, special materials handling equipment, nor the cost of actually relocating the equipment from existing shops to new satellite shops, nor the addition of a new large drydock, etc. These would be the subjects of separate individual projects, each being evaluated on their own ROI merits..

111. CONCLUSIONS

The following general conclusions were reached:

- i) Any significant expansion of output capacity would require additional space; any rearrangement of facilities within the existing confines of the yard, while offering the potential for some improvement, is limited. While possibly worthwhile as stand-alone strategies, most of such steps would not fit with an ultimate major expansion. Thus, such expenditures would have short-lived benefits

if a major expansion subsequently became desirable. In fact, they could contribute to higher operating costs in NASSCO's already crowded facility.

- ii) A waterfront site is essential, both for potential pier space and a floating drydock as well as the capability to barge shop output to the main yard.
- iii) Available waterfront land in San Diego is extremely limited. Alternatives 3 through 6 represent the only possibilities that we know of While it is difficult to predict-how soon these areas might become unavailable (the port District puts a water use orientation priority on all these properties), it must be recognized that these are very finite resources. But space is essential if we are to start introducing new technologies in production methods on a practical and ongoing basis. The company may be forced to commit capital to secure such land. earlier than might have been thought necessary because of the very limited availability of such property.
- iv) The capital commitment required is sizable, ranging from an initial cost of \$.5 million to \$9.0 million to a final cost of \$10.5 million to \$44 million. The alternatives differ significantly in total cost and rate of commitment over time.

It should be noted that there is some possibility that MARAD and/or the U. S. Navy Manufacturing Technology Program would participate to some extent in funding the shipyard's long-range productivity enhancement and re-industrialization projects.

- v) Due to the magnitude of the capital costs, further reflection on NASSCO'S long-range business plan, utilizing this study as critical input, is in order.

An evaluation of the alternatives has been made, the financial analyses are shown with each of the alternatives, and the evaluation of the relevant intangible factors is shown in Appendix J. On the combined basis of the financial **and** intangible evaluations, we make the following statements:

- Alternative 1 which is the Delta site (3.4 acres), while attractive because it is contiguous property which would relieve crowding and enhance material flow, is not by itself available long-range solution to increase new ship construction or repair. It could, however, be taken in conjunction with one of the other major proposals, if it could be obtained at a reasonable cost.
- Alternative 2, moving main parking lot fence to enclose 2.1 additional acres, is not deemed to be of significant benefit to NASSCO'S current space requirement problems and would exacerbate an already severe parking problem.
- The ITT Building site. (Alternative 4) is landlocked, with permission to use an adjoining Port Authority wharf for loading and unloading only. This alternative would significantly relieve current main yard congestion, but would not allow for additional pier capacity for new ship construction outfitting or growth in major repair work opportunities (via a new drydock).

- If growth in N/C (New Construction) in fact materializes, and we intend to achieve major technological upgrading, and allow for an increase, in repair work (via a new drydock), and to give the optimal degree of flexibility, we would require the 40 acres which Alternatives 3 or 5 would allow . However, all indications are that due to local opposition the chance of acquiring the Chula Vista Sweetwater site (Alternative 3) is remote. This would leave only Alternative 5 as the optimal long-range solution to handle ALL of the above eventualities.
- The 20 acres of waterfront property which Alternative 6 allows, would be a minimum practical area. It provides enough space: (1) to start the new. technological improvements.; 2) to accommodate some increase in New Construction Work; or (3) to provide for increased repair work at some future date. Should ALL eventualities take place, we would be required to find additional space for certain services such as warehousing, parking, blue sky storage, etc.,. at some second satellite site in order to free-up acreage to support the additional waterfront related needs.

Iv RECOMMENDATION

Recognizing that the ROI from any capital commitment to a new satellite facility, based upon new. shipbuilding technology, an increase in N/C work, and an increase in the tempo of ship repair activity is highly speculative, it is prudent to reduce the up-front exposure where possible.. Taking this into consideration and recognizing that Alternative 6 will in all likelihood provide adequate (though not optimum facilities) , Alternative 6 becomes the most viable, therefore, it is recommended.

ALTERNATIVE SUMMARY

ALTERNATIVES	ADDITIONAL (a)						ABILITY TO ADD FLOATING DRY DOCK	AREA OPENED UP IN MAIN YARD (S. F.)	OFF SITE LOCATIONS ELIMINATED NUMBER SQUARE FOOTAGE	TIME PHASE		
	ACRES	SHOP S. F.	OFFICE S. F.	WAREHOUSE S. F.		BERTHS				FIRST MOVE	FINAL MOVE	YEARS TO COMPLETE
				UNDERROOF (p)	BLUE SKY (q)							
Present Facilities	101.3 (n)	220,000 (o)	211,100	276,300 (p)	767,000 (q)	10	No	N/A	N/A	N/A	N/A	N/A
1. Delta Property.	3.4	-0-	2,500 M	32,000 M	114,000	0	No	148,000	-0-	1987	1987	Less than 1 year.
2. Move main parking lot fence north to railroad tracks.	2.1	-0-	-0-	-0-	92,000	0	No	92,000	-0-	1981	1981	Less than 1 year.
3. Greenfield on water-Chula Vista Sweetwater Site. (Includes Delta Property.)	43.4	218,000 M	70,000 M 2,500 M	200,000 M 32,000 M	724,000	2	Yes	690,000	6 745,000	1985	1990	5 years (u)
4. ITT Building. (Includes Delta Property.)	21.4	88,000 M	40,000 M 32,500 M	146,000 M	506,000	0 (b)	No	442,000	6 358,000	1981	1984 (i)	3 years (i)
5. ITT Building and adjoining 20 acres. (Includes Delta Property.)	41.4	130,000 M 88,000 M	40,000 M 32,500 M	100,000 M 146,000 M	767,000	2	Yes	690,000	6 745,000	1981	1987	6 years
6. Greenfield on water behind ITT site (Includes Delta Property.)	23.4	82,000 M	70,000 M 2,500 M	110,000 M 32,000 M	384,000	2	No (c)	422,000	5 745,000	1984	1987	3 years

ALTERNATIVES	ESTIMATED CAPITAL COSTS (d)										GRAND TOTAL	(j) MINIMUM BUY IN COSTS	ADDITIONAL ANNUAL COSTS	ANNUAL SAVINGS
	1981 (e)	1982	1983	1984	1985	1986	1987	1988	1989	1990				
1. Delta Property.	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ -0-	\$ 127,000 127,000 (f)	\$ -0- 127,000	\$ -0- 127,000	\$ -0- 127,000	\$ 127,000	\$ 127,000	\$ 10,000	\$ 147,000
2. Move main parking lot fence north to railroad tracks.	927,000 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	-0- 927,000	927,000	927,000	-0-	120,000
3. Greenfield on water-Chula Vista Sweetwater Site. (Includes Delta Property.)	100,000 100,000	5,742,000 9,442,000	11,595,000 17,437,000	3,911,000 21,348,000	133,000 21,481,000	14,934,000 36,415,000	1,414,000 37,829,000	3,083,000 40,912,000	1,917,000 42,829,000	482,000 43,315,000	43,365,000	14,692,000 (k)	581,000	1,076,000
4. ITT Building. (Includes Delta Property.)	8,523,000 8,523,000	1,283,000 9,806,000	647,000 10,453,000	65,000 10,518,000	-0- 10,518,000	-0- 10,518,000	50,000 10,568,000	-0- 10,568,000	-0- 10,568,000	-0- 10,568,000	10,568,000	9,150,000	524,000	954,000
5. ITT Building and adjoining 20 acres. (Includes Delta Property.)	8,000,000 8,000,000	1,283,000 9,283,000	747,000 10,030,000	2,640,000 12,670,000	3,960,000 16,630,000	10,582,000 27,212,000	747,000 27,959,000	-0- 27,959,000	-0- 27,959,000	-0- 27,959,000	27,959,000	9,150,000	684,000	1,076,000
6. Greenfield on water behind ITT site (Includes Delta Property.)	100,000 100,000	3,005,000 3,105,000	4,779,000 7,884,000	4,343,000 12,227,000	1,431,000 13,658,000	10,053,000 23,711,000	224,000 23,935,000	-0- 23,935,000	-0- 23,935,000	-0- 23,935,000	23,935,000	12,379,000	540,000	954,000

NOTES

- a. N - New Construction; E - Existing Building.
- b. No waterfrontage for additional wharfs. Limited access to one (1) berth nearby.
- c. A floating dry dock could be stationed at the 20) acre site, however, the scenario for Alternative 6 would have to be completely changed.
- d. Estimated capital costs columns reflect the best comparative estimated cost figures based upon the presently identified details of each alternative less other than original purchase costs as listed on Page 3.
- e. Yearly total over cumulative costs.
- f. This cost could be much higher if Delta Property was acquired before Delta's lease runs out in 1987.
- g. Includes cost (\$12,000,000) for heavy dredging and wharf.
- h. Includes cost (\$9,000,000) for dredging and wharf.
- i. Does not include move into Delta property.
- j. Minimum buy-in costs for all alternatives except 1 and 2 are matched to reflect an equal site and facility as the existing ITT Building and site. (ITT cost includes building cost plus manufacturing and office area upgrade.)
- k. Assumes 18 acre site will be completely on port land, therefore, no purchase of the additional 22 acres is shown.
- l. All costs and savings figures are shown in 1980 dollars.
- m. Time phase is nine years due to acquisition and permit cycles having to start in 1981.
- n. Acreage legally controlled excluding water 101.3 acres, 78.4 acres main production facility, 11.9 acres parking, 11.0 acres out of yard facilities.
- o. Shop area underroof only, an additional 410,000 square feet can be added for blue-sky operations excluding building positions and dry dock.
- p. Does not include in process storage.
- q. Four effective outfitting berths, four effective repair work berths, and two barge mooring berths.

ADDITIONAL COSTS FOR ALL ALTERNATIVES

The following costs, which have NOT been included in the analysis, are considered to be the same for all alternatives:

1. Moving and rearrangement costs from old to new locations.
2. Upgrading of equipment and facilities related to offices and manufacturing operations will each be evaluated on their own ROI merits.
- 3 Upkeep and maintenance of facilities will stay approximately the same.
4. Insurance costs will stay in the same general range for all alternatives.
5. Security costs will stay approximately the same except where specifically noted.
6. Energy costs have not been included in this analysis due to the instability of the rate structure and the state of flux that currently surrounds the cost of energy.

1. DELTA PROPERTY (WEST END OF YARD)

The expansion of the main yard is limited to the Delta Property at the west end of the yard. This property is currently leased by Delta Truck Lines from the Port Authority, terminating in 1987. An early buy-out of this lease would cost a substantial sum, to make a total of 3.4 acres available.

This property being at the extreme west end of the yard and out of the normal material flow. does not lend itself to a very desirable acquisition. However, it would. be an excellent location for an in yard receiving and issue warehouse and additional employee parking. This would provide an additional 3.4 acres in and around Building #45 at the cask end of the yard. Building #45 could be demolished to open up the east end, but only after moving the Mold Loft out. This would be of minor benefit to yard growth unless the remaining Buildings #43, 44. and 51 were also removed.. Therefore, it is recommended that this alternative be carried out only in conjunction with one of the other alternatives.

FINANCIAL DATA (1980 DOLLARS)

CAPITAL COSTS - 1987

Delta Lease Buyout Cost

(in 87) if in 81 \$1,000,000. -0-

Building Refurbishing

Relocate west end fence. \$ 50,000

* Demolish Building #45

28,368 S.f. X \$1.50/s.f. 43,000

* Surface prep and blacktop

15,00.0 S.f. x \$2.25/s.f. 34,000

TOTAL CAPITAL COSTS \$ 127,000

ANNUAL COSTS

* Lease Costs - Delta Property \$ 30,000

TOTAL ADDITIONAL ANNUAL COSTS \$ 30,000

ANNUAL SAVINGS

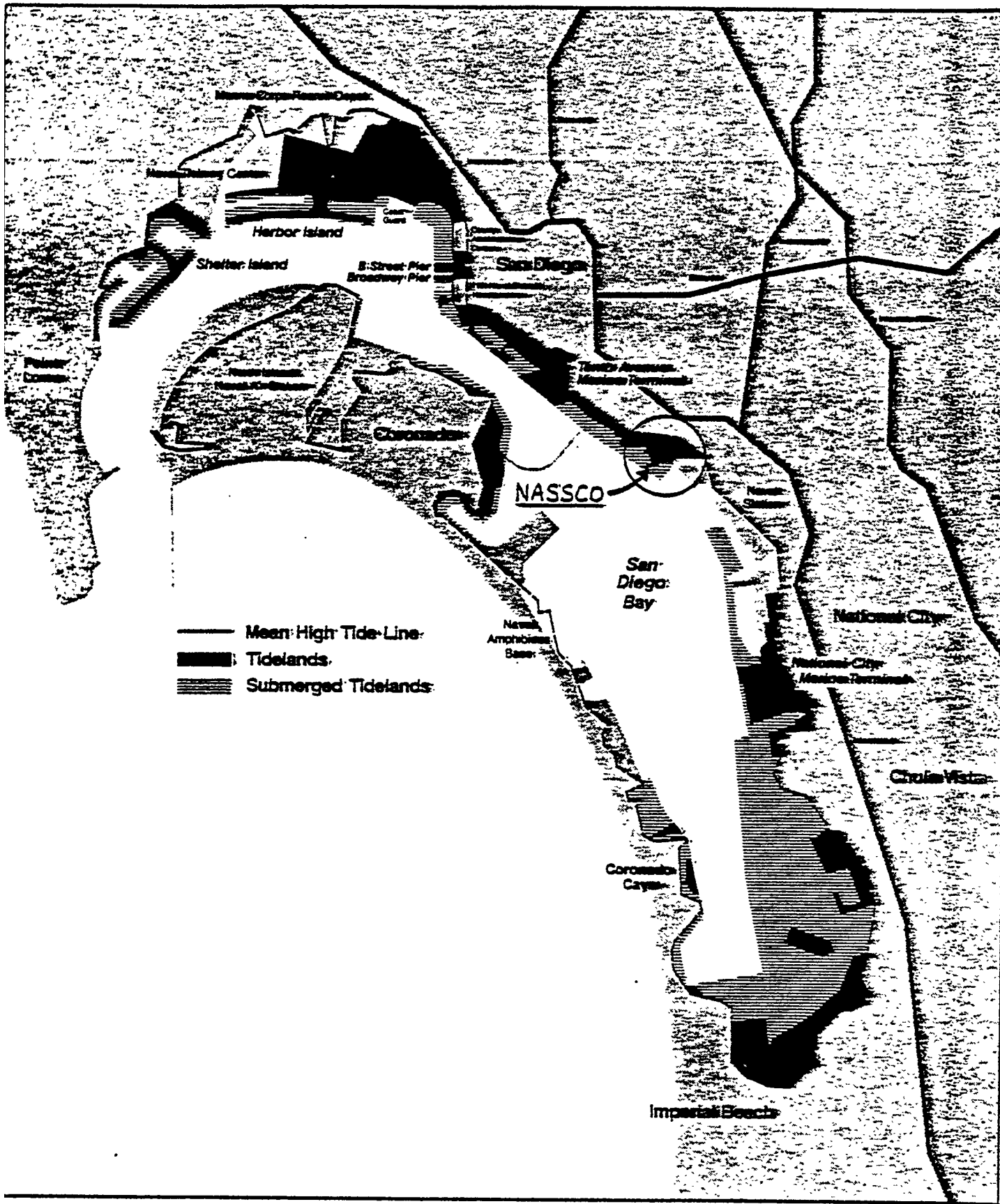
* Additional blue sky acreage.

148,104 X \$.32/s.f.. \$ 47,000

* Transportation costs avoided.

100,000

ANNUAL SAVINGS \$ 147,000



The Port's Planning Jurisdiction



Scale

0 8000'

Planning Department

Revised

Date

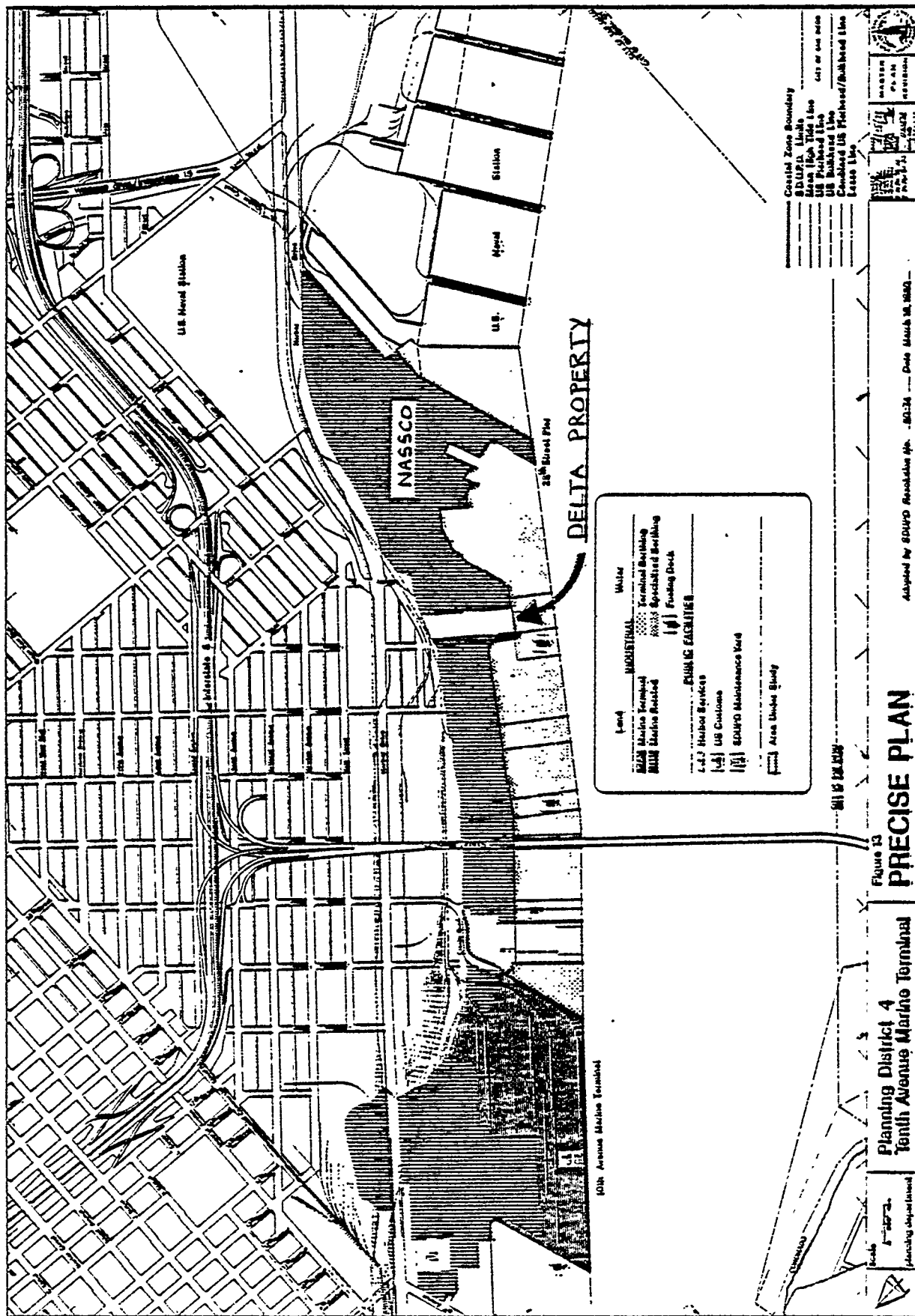
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2. MOVE MAIN PARKING LOT FENCE NORTH TO RAILROAD TRACKS

Relocate the present main parking lot fence north to a location along the AT & SF railroad tracks and bordering Harbor Drive. This rather narrow piece of land would provide a total of 2.1 acres primarily for warehousing or inprocess storage. However, moving the fence north would compound an already serious parking problem, therefore, an additional two acres would have to be purchased for parking, preferably across Harbor Drive in the Barrio area. This alternative has little or no value in the Long Range Facility Plan and should only be carried out as a last resort for storage area.

FINANCIAL DATA (1980 DOLLARS)

CAPITAL COSTS - 1981

* Move fence north.	\$ 100,000
* Acquire two acres of Barrio Property @ \$6/s. f.	523,000
* Move out costs.	100,000
* To make useful for NASSCO. Demolish buildings 5,000 S.f. x \$1.50/s.f..	8,000
Surface prep and blacktop 87,120 s.f. x \$2.25/s.f.	196,000
	<hr/>
TOTAL CAPITAL COSTS	\$ 927,000

ANNUAL COSTS

-0-

TOTAL ADDITIONAL ANNUAL COSTS

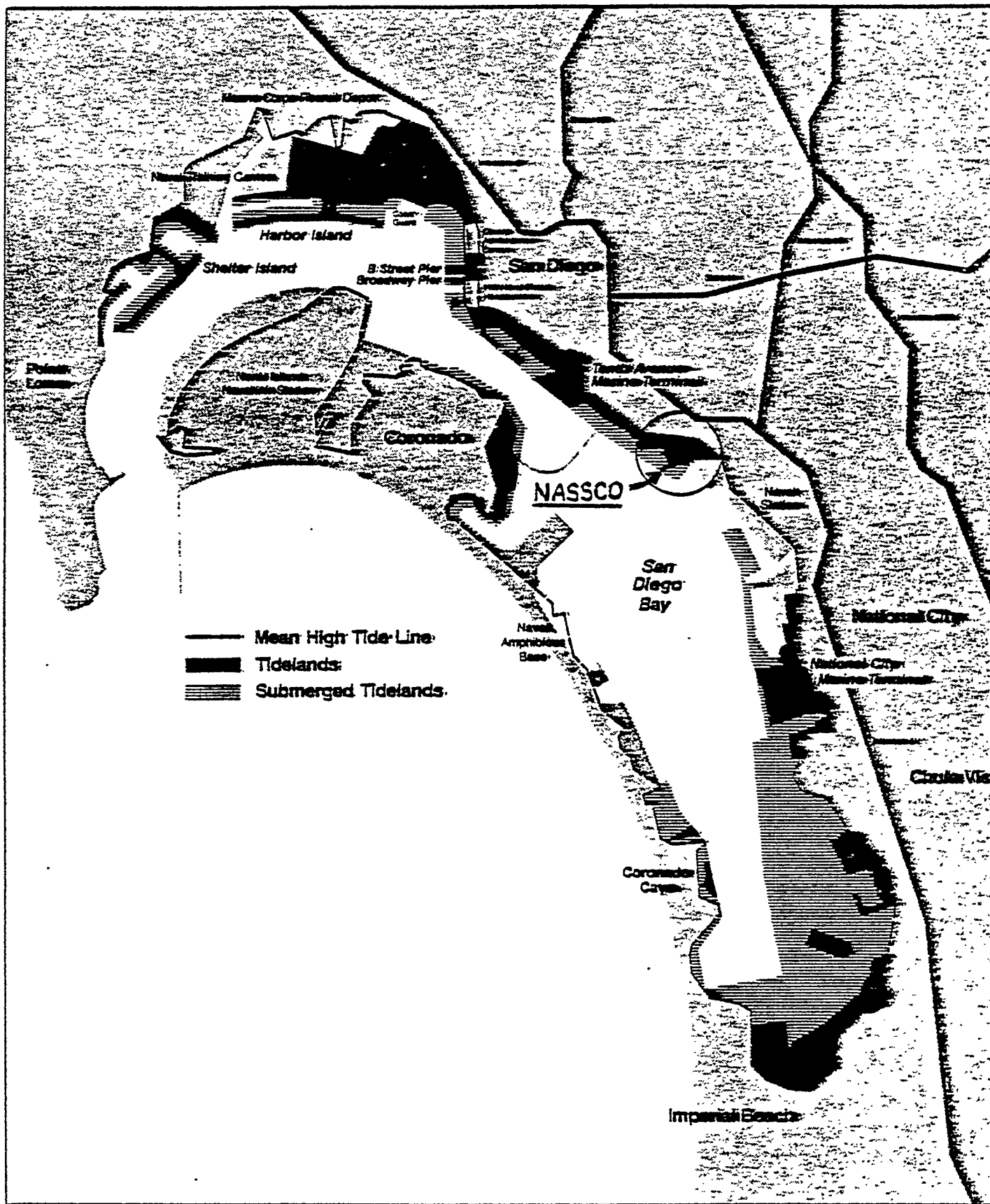
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ANNUAL SAVINGS

* Additional blue sky acreage. 87,120 s.f. X \$.32/s..f.	\$ 28,000
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* Transportation costs avoided.

ANNUAL SAVINGS \$ 128,000



Scale

0 8000'

Planning Department

The Port's Planning Jurisdiction

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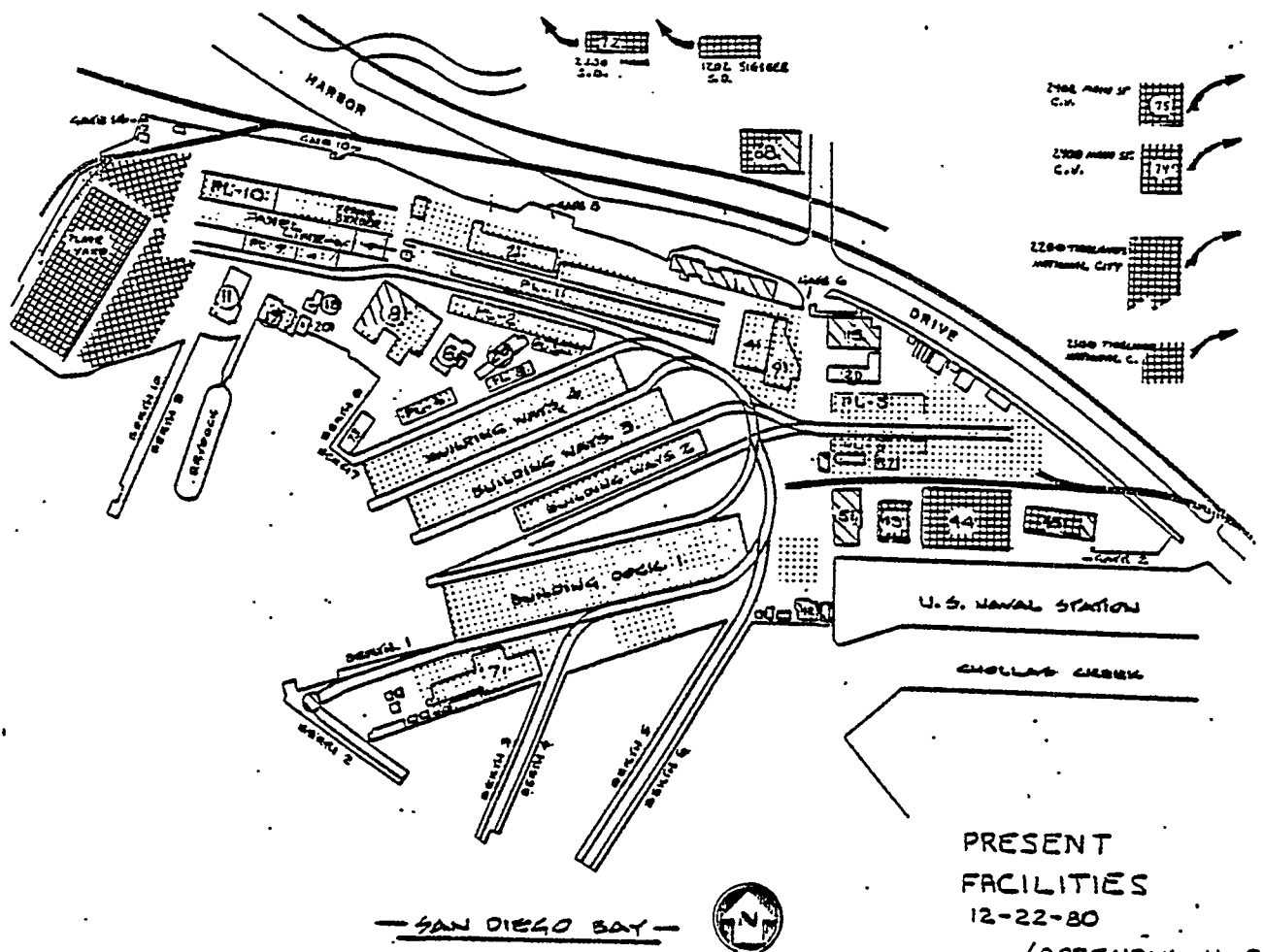
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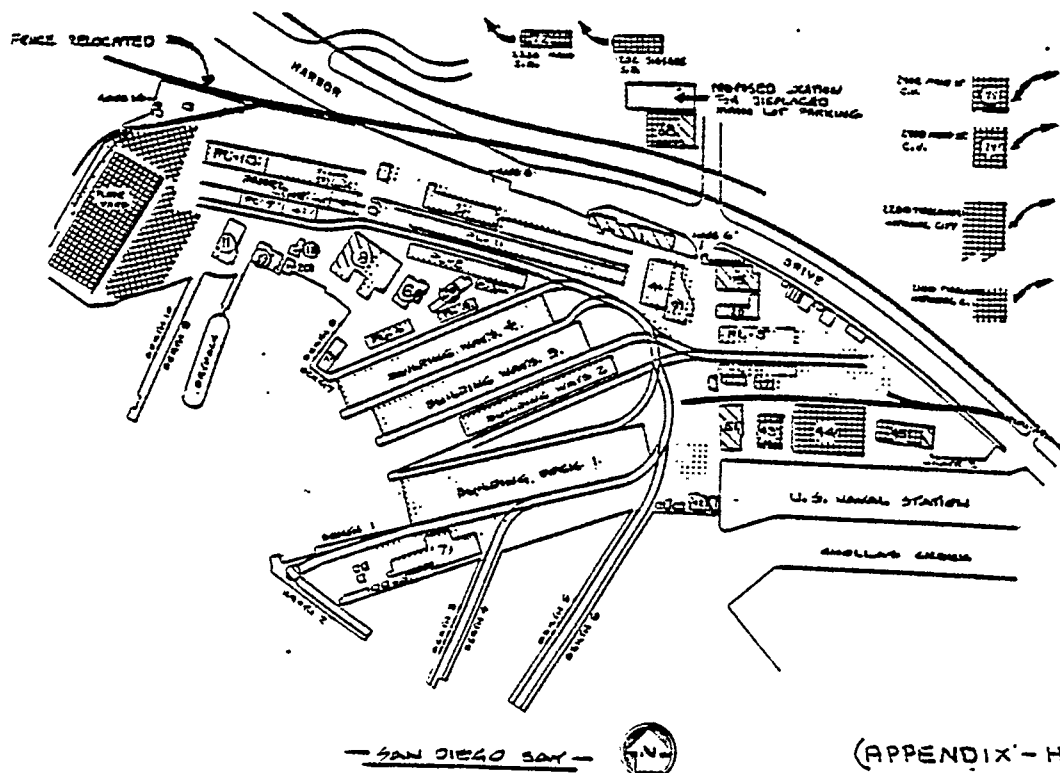
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NEW MAIN YARD LAYOUT

INCLUDES MOVE MAIN LOT PARKING FENCE NORTH



3. GREENFIELD ON WATER - CHULA VISTA SWEETWATER SITE

The proposed site is 40 acres of undeveloped marshland and will require major expenditure and considerable time to make it a viable manufacturing site. Major dredging, piling and filling will be needed. The Satellite yard can be laid out in the optimum way to suit NASSCO's Long Range. Envelopment Plans.

When the. Satellite site became fully operational the main yard would be- primarily a steel fabrication facility including all operations from steel plate and shapes receiving through storage, cutting, fabrication of sub-assemblies and assemblies, blasting and painting, pre-outfitting and ship erection. Outfitting would primarily be performed at the main yard with the over flow being done at the Satellite yard. Major repair work would remain in the main yard as long as the current level is held. If repair work activity is increased or a Large floating dry dock is acquired then all repair functions should be shifted to the Satellite yard.

The Satellite site would primarily be a support-type facility, including Pipe Shop, Sheet Metal Shop, Electrical Shop and Machine Shop. All parts and raw materials for these support functions would be received and stored at this site. A major portion of NASSCO's off ices will also be located at this site, including *Design Engineering*, *New Construction Estimating*, *Mold Loft*, *Purchasing*, *contracts and Sup-Ships (Customer - u. S. Navy Administrative Agent)* . This site will be used as a major marshalling area so that purchased parts and NASSCO manufactured assembled can be sent to the main yard in kit form on an as needed basis by road, cailroad or barge.

This alternative will provide the required acreage to allow NASSCO room for *growth* and still maintain the flexibility to build virtually any mix of ships from 100% commercial to 100% Navy work on a wide variety of non-combatant vessels. Should it become desirable to maintain a viable work force in the event of a downturn in new ship construction space could be made available at the Satellite yard for other-than-maritime major assembly work.

There is a serious question as to the availability of this site. The City of Chula Vista is making major efforts to increase the waterfront area which they are now using and are planning to use for recreational activities. This could come close to or encroach on the area concerned. There could be environmental problems. The city may well not want to have (in effect) a manufacturing shipyard adjoining their planned. recreational area.

Although the area is currently believed to be available for development as a satellite yard, local knowledge of the attitudes of the Chula Vista city fathers suggests that development of this site could become a protracted problem with long delays in issuing permits, etc

INTERMEDIATE SHORT STAGES OF DEVELOPMENT

The following implementation schedule assumes a final approval by the Board of Directors no later than June, 1981. Before continuing fold out yard layouts on Page 30 for reference.

JULY 1981 THROUGH JUNE 1983

- * Obtain all permits, except waterfront related projects (1).
- * Acquire long lease on Tidelands property front the Port Authority.
- * Acquire 22 acres (Or at a minimum, an option) from AT & SF railroad adjoining Tidelands. Property.
- * Prepare site - level, roads, rail spur, utilities, etc.

1983(last six months)

- * Obtain building permits (City of Chula Vista) .
- + Start construction on Pipe Shop (70,000 s. f.) .
- * Start construction on warehouse (100,000 s. f.) .
- * Start permits cycle for wharf construction in 1986.
- * Start design and permits cycle for new office building.

1984

- * Start and complete construction of office building.
- * Start and complete construction on Maintenance Building (5,000 S.. f.)
- * Blacktop six acres for parking.
- * Complete Pipe Shop.
- * Complete warehouse.

NOTE : (1) Expect up to six. months variation due to all governmental agencies approvals. (See Appendix-B as an example of a typical road block.)

1984 - (continued)

Blacktop area around completed buildings.

- * Blacktop six acres for blue sky warehousing.

1985

- * Move into new office building (Engineering, N/C Estimating., Purchasing, etc.) .
- * Move into new warehouse deleting need for Buildings #43, 44. 45 and 68..
- * Move into new Pipe Shop.
- * Discontinue foundry business.
- * Demolish old Pipe Shop and Foundry, blacktop area.
- * Move main yard receiving and issue warehouse into Building #68.
- * Move TideLands blue sky warehousing to Satellite yard.
- * Move all personnel out of office trailers into offices opened up by new office building.

1986

- * Start dredging and construction of 1,400 * wharf.
- * Construct marshaling. area. (4 acres)
- * Demolish Engineering Office Building #51, blacktop and convert into a pre-erection area.
- * Demolish Buildings #43, 44 and 45, blacktop and convert into a blasting,. painting and drying area.

1987

- * Complete wharf and start using for overflow outfitting and repair from the main yard.
- * Acquire long lease on Delta Property.
- * Start and complete construction on Electrical Shop 12,000 S.f.
- * Start Machine Shop construction 50,000 s.f.

1988

- * Complete Machine Shop.
- * Move into new Machine Shop.
- * Move into new Electrical Shop.
- * Start and complete second warehouse 100,000 s.f.
- * Blacktop area around new buildings.
- * Move occupants of Building #42 into Building #15.
- * Demolish Building #42 and blacktop area.

1989

- * Move *into* second warehouse eliminating the need for the remaining outside warehouses.
- * Start construction on Sheet Metal Shop 80,000 s.f.
- * Move Carpenter Shop (Building #19), Transportation Office (Building #78), Torch Repair (Building #61), Outside Repair (Building #11), Misc. Office (Building #20), Ways Repair (Building #18) and Template Storage (Building #26) into the old Machine Shop (Building #8).
- * Demolish Buildings #11, 18, 19 and 20 and blacktop area.
- * Demolish Buildings #6 and 26 and blacktop area.
- * Demolish Buildings #62 and 78 and blacktop area.

1990

- * Complete Sheet Metal Shop.
- * Move into new Sheet Metal 'Shop.
- * Demolish old Sheet Metal Shop (Building #7) and blacktop area.
- * Blacktop remaining open areas for inprocess storage.

FINANCIAL DATA RECAP

<u>YEAR</u>	<u>CAPITAL COST</u>	<u>CUMULATIVE CAPITAL COSTS</u>	<u>ADDITIONAL ANNUAL COST</u>	<u>ANNUAL SAVINGS</u>
1981	\$ 100,000	\$ 100,000	\$ -0-	\$ -0-
1982	5,742,000	5,842,000	201,000	-0-
1983	11,595,000	17,437,000	201,000	-0-
1984	3,911,000	21,348,000	201,000	-0-
1985	133,000	21,481,000	551,000	737,000
1986	14,934,000	36,415,000	551,000	737,000
1987	1,414,000	37,829,000	581,000	737,000
1988	3,083,000	40,912,000	581,000	737,000
1989	1,971,000	42,883,000	581,000	1,076,000
1990	482,000	<u>43,365,000</u>	581,000	1,076,000
TOTAL PROJECT CAPITAL COSTS		\$43,365,000		

FINANCIAL DATA (1980 DOLLARS)

CAPITAL COSTS

1981

CUMULATIVE
CAPITAL
COSTS

* Obtain all *permits, except*

water front related projects. \$ 100,000⁽¹⁾

TOTAL 1981 CAPITAL COSTS \$ 100,000 \$ 100,000

1982

* Acquire 22 acres from AT & SF

railroad at \$261,000/acre. \$5,742,000

TOTAL 1982 CAPITAL COSTS \$5,742,000 \$ 5,842,000

1983

* Obtain building permits (City
of Chula Vista) . . \$5,000

* Prepare site - level roads,
rail spur utilities etc. 5,500,000

* Construct 70,000 s.f. Pipe
Shop at \$22/s.f. 1,540,000

* Construct 100,000 s.f. ware-
house building at \$22/s.f.. 2,200,000

* Obtain permits for wharf
construction in 1986. 100,000⁽¹⁾

* Engineering and design of
70,000 s.f. office building. 250,000

* Power Services buildings
boilers, air compressors, etc.) . 2,000,000

TOTAL 1983 CAPITAL COSTS \$11,595,000 \$17,437,000

NOTE : (1) This figure could be \$10,000 to \$1,000,000 depending
on the unforeseen factors.

CAPITAL COSTS-(continued)

CUMULATIVE
CAPITAL
COSTS

1984

* Construct 5,000 s.f.. maintenance building at \$22/s.f.	\$ 110,000	
* Construct 70,000 s.f. office building at \$35/s.f.	2,450,000	
* Blacktop. six acres for parking at \$2.00/s..f.	523,000	
* Blacktop area around production buildings. 3.5 acres at \$2. 00/s.f . .	305,000	
* Blacktop six acres for blue sky warehousing at \$2.00/s.f..	<u>523,000</u>	
TOTAL 1984 CAPITAL COSTS	\$ 3,911,000	\$21,348.000

1985

* Demolish old Pipe Shop and Foundry" Building. 35,000 S.f. at \$1.50/s.f.	\$ 53,000	
* Blacktop old Pipe Shop and Foundry Area. 40,000 S.f. at \$2.00/s.f.	<u>80,000</u>	
TOTAL 1985 CAPITAL COSTS	\$ 133,000	\$21,481,000

CAPITAL COSTS-{continued}

		<u>CUMULATIVE CAPITAL COSTS</u>
<u>1986</u>		
* Major dredging.	\$ 2,200,000	
* Construct one wharf 1,400 feet long.	12,000,000	
* Blacktop four acres for marshalling and staging area at \$2.00/s.f.	349,000	
* Demolish Engineering Building #51. 30,000 s.f. at \$1.50 /s.f.	45,000	
* Blacktop old Engineering Building. area. 30,000 s.f. at \$2.00/s*f.	60,000	
* Demolish Buildings #43, 44 and 45. 80,000 s.f. at \$1..50/s.f.	120,000	
* Blacktop area of Buildings #43, 44 and 45. 80,000 s.f. at \$2. 00/s.f.	<u>160,000</u>	
TOTAL 1986 CAPITAL COSTS	\$14,934,000	\$36,415,000
<u>1987</u>		
* Construct 12,000 s.f. Electrical . Shop at \$22/s.f..	\$ 264,000	
* Construct 50,000 s.f. Machine Shop at \$22/s.f.	1,100,000	
* Relocate main yard west end fence to include Delta Property.	<u>50,000</u>	
TOTAL 1987 CAPITAL COSTS	\$ 1,414,000	\$37,829,000

CAPITAL COSTS-(continued)

CUMULATIVE
CAPITAL -
COSTS

1988

* Construct 100,000 s.f. warehouse building at \$22/s. f.	\$ 2,200,000	
* Demolish Building #42. 3,500 s.f. at \$1.50/s.f.	5,000	
* Blacktop area of old Building #42. 3,500 s.f.. at \$2.00/s.f.	7,000	
"* Blacktop around new building at Satellite site. 10 acres at \$2.00/s. f.	<u>871,000</u>	
TOTAL 1988 CAPITAL COSTS	\$ 3,083,000	\$40,912,000

1989

* Construct 80,000 s.f. Sheet Metal. Shop at \$22/s.f.	\$ 1,760,000	
* Demolish Buildings #11, 18, 19 and 20. 31,000 s.f. at \$1.50/s. f.	47,000	
* Blacktop area of old Buildings #11, 18, 19 and 20. 31,000 s. f. at \$2.00/s..f.	62,000	
* Demolish Buildings #6 and 26. 24,000 s.f. at \$1.50/s.f.	36,000	
* Blacktop area of old Buildings #6 and 26. 24,000 s.f. at \$2.00/s.f.	48,000	
* Demolish Buildings #61 and 78. 5,000 s.f. at \$1.50/s.f.	8,000	
* Blacktop area of old Buildings #61 and 78. 5,000 s.f. at \$2.00/s.f.	<u>10,000</u>	
TOTAL 1989 CAPITAL COSTS	\$ 1,971,000	\$42,883,000

CAPITAL COSTS-(continued)

1990

CUMULATIVE
CAPITAL
COSTS

* Demolish old Sheet Metal Shop.

38,000 s.f. at \$1.50 /s. f. \$ 57,000

* Blacktop old Sheet Metal Shop
area. 38,000 s.f. at \$2.00/
s.f.

7 6 , 0 0 0

* Blacktop remaining open area at
Satellite site for inprocess
storage. 4 acres at \$2.00/s.f.

349,000

TOTAL 1990 CAPITAL COSTS \$ 482,000

TOTAL PROJECT CAPITAL COSTS

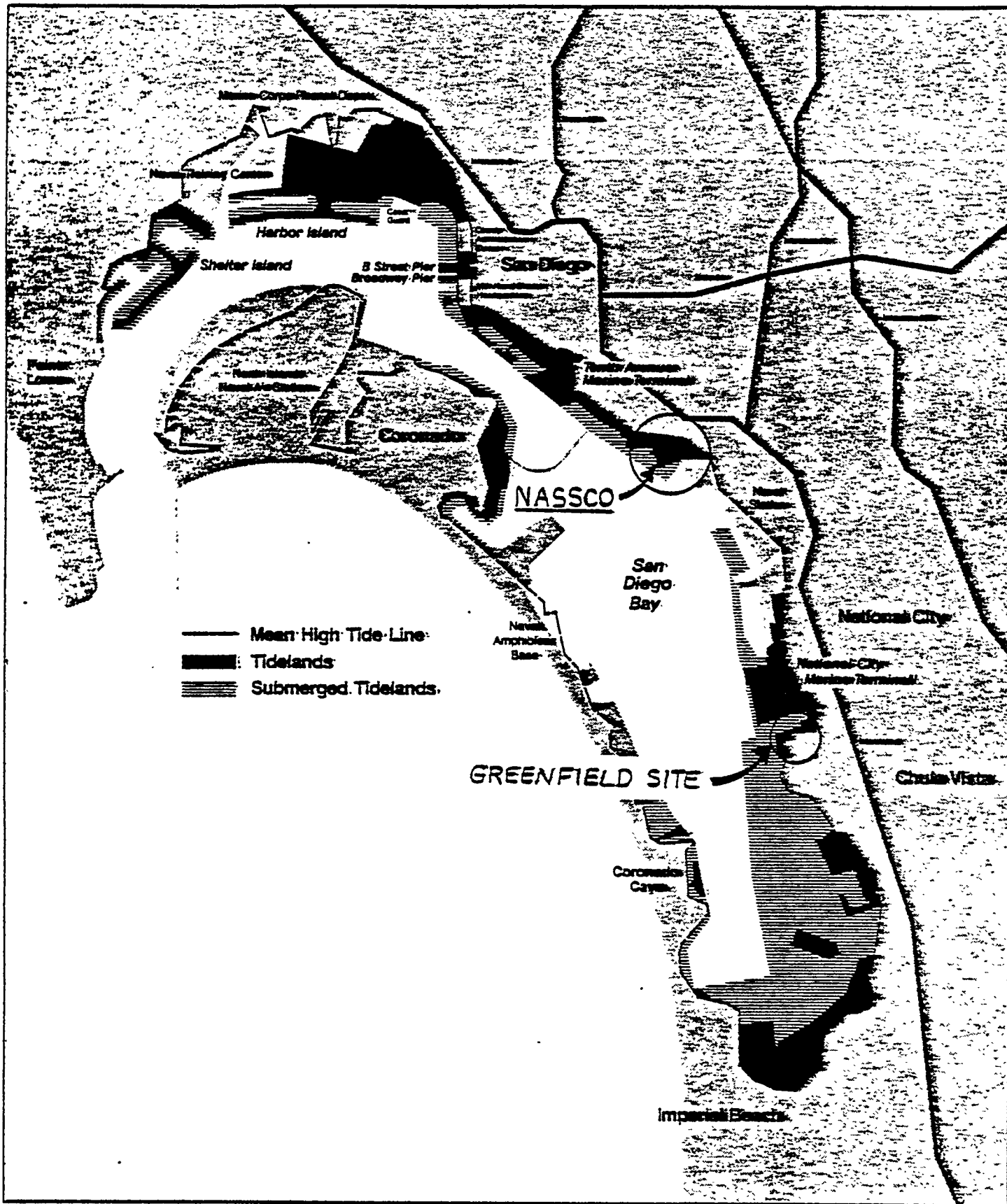
\$43,356,000

ADDITIONAL ANNUAL COSTS

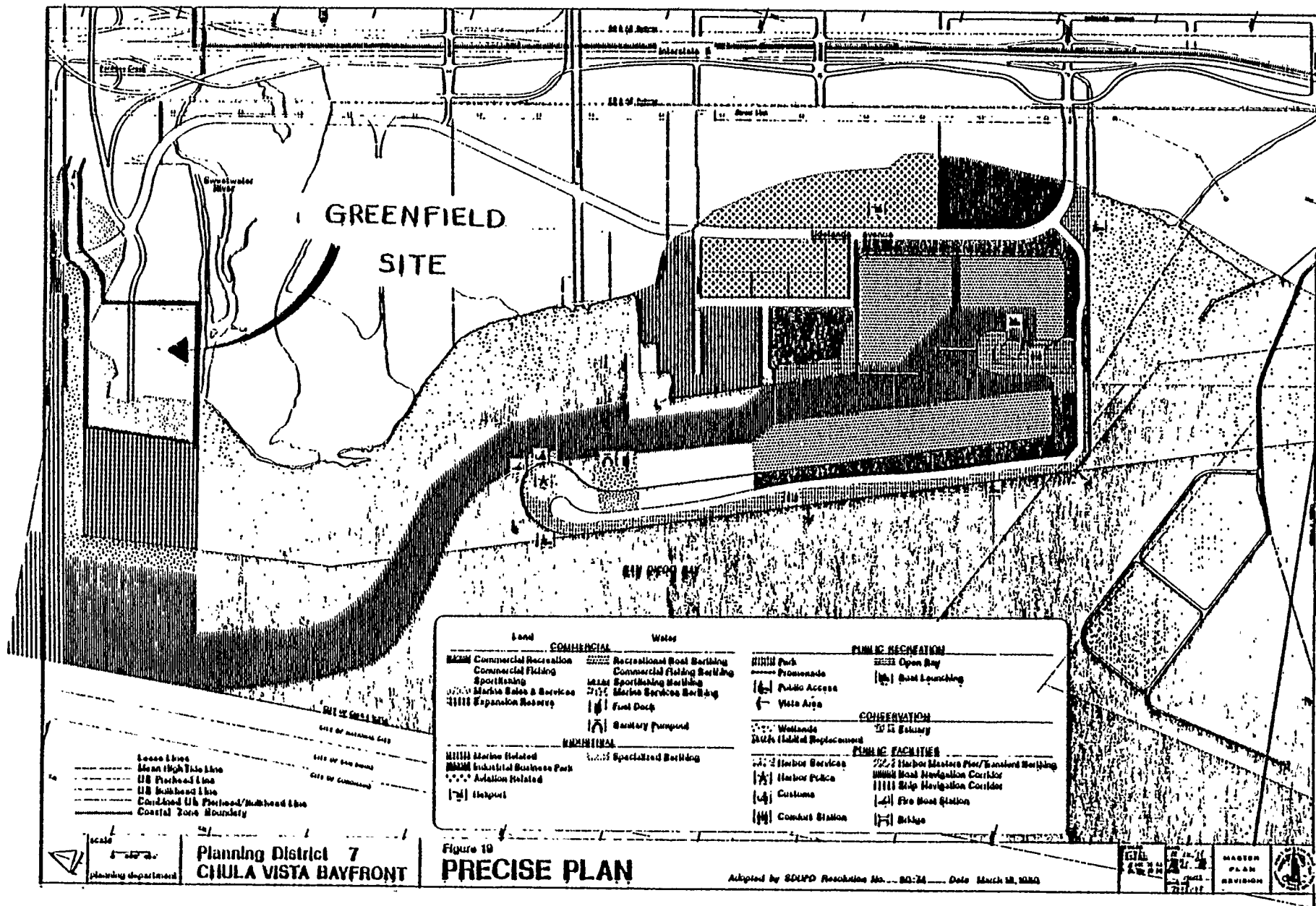
	1981	1982	1983	1984	1 9 8 5	1 9 8 6	1 9 8 7	1988	1989	1990
Lease on Satellite Yard.	-0-	\$201,000	\$201,000	\$201,000	\$201,000	\$201,000	\$201,000	\$201,000	\$201,000	9201,000
Increased trans- portation costs between sites.	-0-	-0-	-0-	-0-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Cost of lost additional revenue through closing foundry .	-0-	-0-	-0-	-0-	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
Lease on Delta Property	-0-	-0-	-0-	-0-	-0-	-0-	\$ 30,000	\$30,000	\$ 30,000	\$ 30,000
YEARLY ADDED ANNUAL COSTS (1980 DOLLARS)	-0-	\$ 201,000	\$201,000	\$201,000	\$ 551,000	\$ 551,000	\$ 581,000	\$581,000	\$581,000	\$ 581,000

ANNUAL SAVINGS

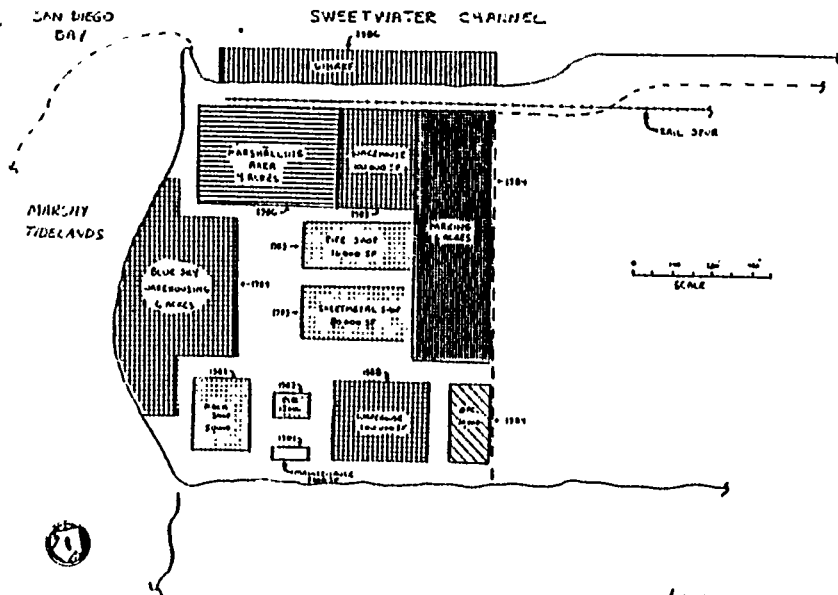
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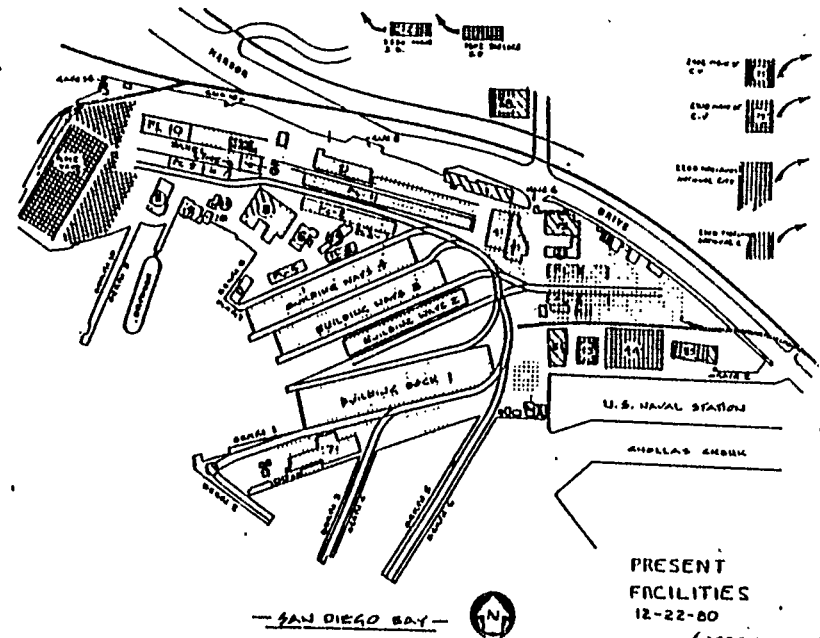
	Scale	<h1>The Port's Planning Jurisdiction</h1>	Date <u>July 10-79</u> Drawn <u>KS</u> Title
	0 8000'		Planning Department



GREENFIELD ON WATER-CIRLA VISTA SWEETWATER SITE



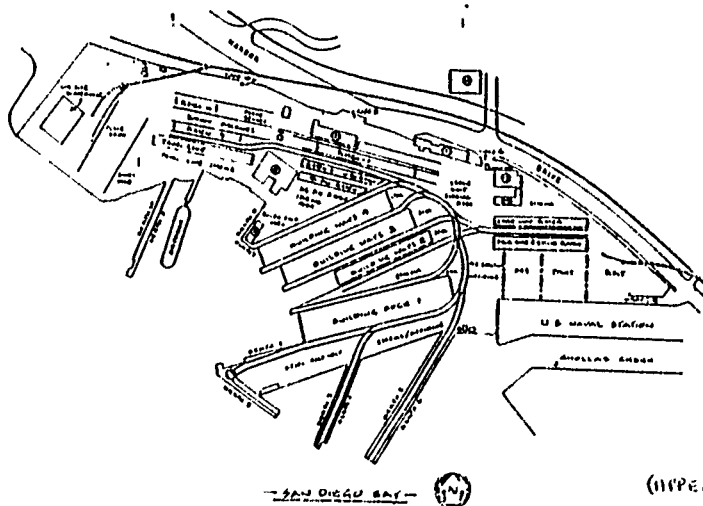
(APPENDIX - II P.104)



PRESENT
FACILITIES
12-22-80

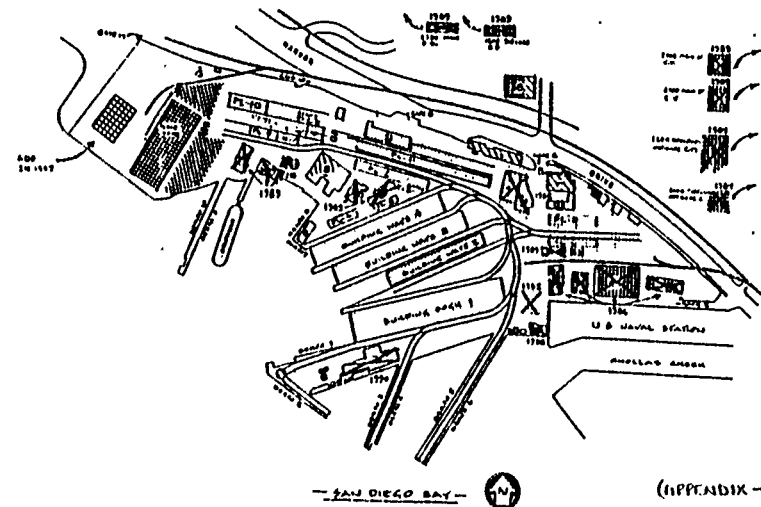
(APPENDIX - II P.106)

POTENTIAL 1990 MAIN YARD LAYOUT



(APPENDIX - II P.105)

CHANGES TO PRESENT FACILITIES



(APPENDIX - II P.107)

4. ITT BUILDING

The proposed 18 acre site has on it a 321,500 square foot modern manufacturing facility, slightly more than 10% in offices, and the rest readily adaptable for manufacturing support shops and warehousing (see Appendix-G) . This alternative is the least expensive and would immediately be available for occupancy. The size of the building will allow. *almost optimum* utilization for NASSCO's needs.

However, this site does not include wharfage, but access for only loading and unloading of material and supplies can be scheduled at a nearby public wharf which is controlled by the Port Authority. No ship repair or construction can be accomplished at this public wharf.

When this Satellite site becomes fully operational the main yard will remain basically as it is now, doing steel construction, outfitting and a limited amount of repair work. The east end of the main yard will be opened up by the removal of the Engineering Building and the warehousing in Buildings #43, 44 and 45. This will allow for the needed room to correct material flow through blast and paint plus space for pre-erection outfitting. The central part of the yard will be cleared for staging of intermediate-size assemblies for large unit construction on Platens 5, 6 and 7. This will be achieved by moving the Pipe Shop to the Satellite Yard and discontinuing' foundry activities.

The Satellite site would primarily be a support-type facility, including Pipe Shop and Electrical Shop. All parts and raw materials for these support functions would be received and stored at this site. A major portion of NASSCO's offices will also be located at this site, including Design Engineering, New

4. ITT BUILDING - (continued)

Construction Estimating, Mold Loft, Purchasing, Contracts and Sup-Ships. This site will also be used as a kitting and marshaling area for pipe and electrical components which will be sent to the main yard on an as-needed basis by road, railroad or barge.

Alternative #.4 will provide the additional acreage to allow NASSCO room for short term growth and will enhance our current flexibility to build virtually any mix of ships from 100% commercial to 100% non-combatant Navy.

INTERMEDIATE STAGES OF DEVELOPMENT

The following implementation schedule assumes a final approval by the Board of Directors no Later than June 1981. Before continuing fold out yard layouts on Page 44 for reference.

1981 (last six months)

- * Acquire ITT Building.
- * Obtain long term lease from Poet Authority for the property that the ITT Building occupies..
- * Blacktop six acres for blue sky warehousing.
- * Make ITT Building ready for Pipe Shop and warehousing.
- * Move Tideland's warehousing onto ITT site.
- * Move maintenance support into ITT Building.

1982

- * Move Pipe Shop into ITT Building.
- * Move warehousing functions into ITT Building from Building #68 and 72.
- * Make ITT Building ready for Electrical Shop, Mold Loft and offices.
- * Discontinue foundry business.
- * Demolish old Pipe Shop and foundry, blacktop area.
- * Start using on-unit construction and storage area.

1983

- * Move Electrical Shop into ITT Building.
- * Move Building #43 and 44 warehousing functions into ITT Building.
- * Move Mold Loft into ITT Building.
- * Move Building #45 main yard receiving and issue warehouse to Building #68.
- * Move into ITT offices (Engineering, N/C Estimating, Purchasing , etc.) .
- * Demolish Engineering Office Building #51, and Buildings *43, 44. and 45, blacktop area and convert into blast, paint, dry and pre-erection area.
- * Blacktop three acres marshalling area.
- * Move all personnel out of office trailers into offices opened up by ITT offices.

1984-

- * Move occupants of Building #42 into Building #15.
- * Demolish Building #42 and blacktop area.
- * Move Carpenter Shop out of decaying Building #19 and into the old Electric Shop Building #6.
- * Demolish Carpenter Shop and blacktop area.

1987

- * Acquire long lease on Delta Property and move warehousing from Buildings #74 and 75 into Delta Building.

FINANCIAL DATA RECAP

<u>YEAR</u>	<u>. CAPITAL COSTS</u>	<u>CUMULATIVE CAPITAL COSTS'</u>	<u>ADDITIONAL ANNUAL COSTS</u>	<u>ANNUAL SAVINGS</u>
1981	\$8,523,000	\$ 8,523,000	\$ 72,000	\$148,500
1982	1,283,000	9,806,000	494,000	651,000
1983	647,000	10,453,000	494,000	794,000
1984	65,000	10,518,000	494,000	794,000
1985	-o-	10,518,000	494,000	794,000
1986	-o-	10,518,000	494,000	794,000
1987	50,000	10,568,000	524,000	954,000
1988	-o-	10,568,000	524,000	954,000
1989	-o-	10,568,000	524,000	954,000
1990	-o-	<u>10,568,000</u>	524,000	954,000
TOTAL CAPITAL PROJECTS .COSTS		\$10,568,000		

FINANCIAL DATA (1980 DOLLARS)

CAPITAL COSTS

1981

CUMULATIVE
CAPITAL
COSTS

* Acquire ITT Building (asking \$8,000,000 but believe that it can be picked up at \$6,000,000 or lower) .	\$6,000,000	
* Blacktop six acres for blue sky warehousing at \$2.00/s.f.	523,000	
* Make manufacturing and ware- house area ready. (Structural, floor and electrical upgrades.)	<u>2,000,000</u>	
TOTAL 1981 CAPITAL COSTS	\$8,523,000	\$8,523,000

1982.

* Make office area ready (rehab. 30,000 S.f. of existing offices and construct 40,000 s.f. with- in ITT Building) .	\$1,150,000	
* Demolish old Pipe Shop and foundry building. 35,000 at \$1.50/s .5.	53,000	
* Blacktop old Pipe Shop and foundry building area. 40,000 s.f. at \$2.00/s.f.	<u>80,000</u>	
TOTAL 1982 CAPITAL COSTS	\$1,283,000	\$9,806,000

CAPITAL COST-(continued)

1983

CUMULATIVE
CAPITAL
COSTS

* Demolish Buildings #43, 44, 45 and 51. 110,000 s.f. at \$1.50/s. f. \$ 165,000		
* Blacktop area of Buildings #43, 44, 45 and 51. 110,000 s.f. at \$2. 00/s. f . .	220,000	
* Blacktop 3 acres of ITT property as a marshalling area at \$2.00/ S.f.	<u>262,000</u>	
TOTAL 1983 CAPITAL COSTS	\$ 647,000	<u>\$10,453rmo</u>

1984

* Demolish Building #42. 3,500 s.f. at \$1.50/s.f.	\$ 5,000	
* Blacktop area of old Building #42. 3,500 s.f. at.\$2.00/s.f.	7,000	
* Demolish old Carpenter Shop Building #19. 15,000 s.f. at \$1.50 /s.f.	23,000	
* Blacktop area of old Carpenter shop . 15,000 s.f. at \$2.00/s.f._	<u>30,000</u>	
TOTAL 1984 CAPITAL COSTS	\$ 65,000	<u>\$10,513,000</u>

CAPITAL COST- (continued)

1987

CUMULATIVE
CAPITAL
COSTS

* Relocate main yard west end fence to include Delta Property in perimeter of yard.	<u>\$ 50,000</u>	<u></u>
TOTAL 1987 CAPITAL COSTS	\$ 50,000	
TOTAL PROJECT CAPITAL COSTS		\$10,568,000

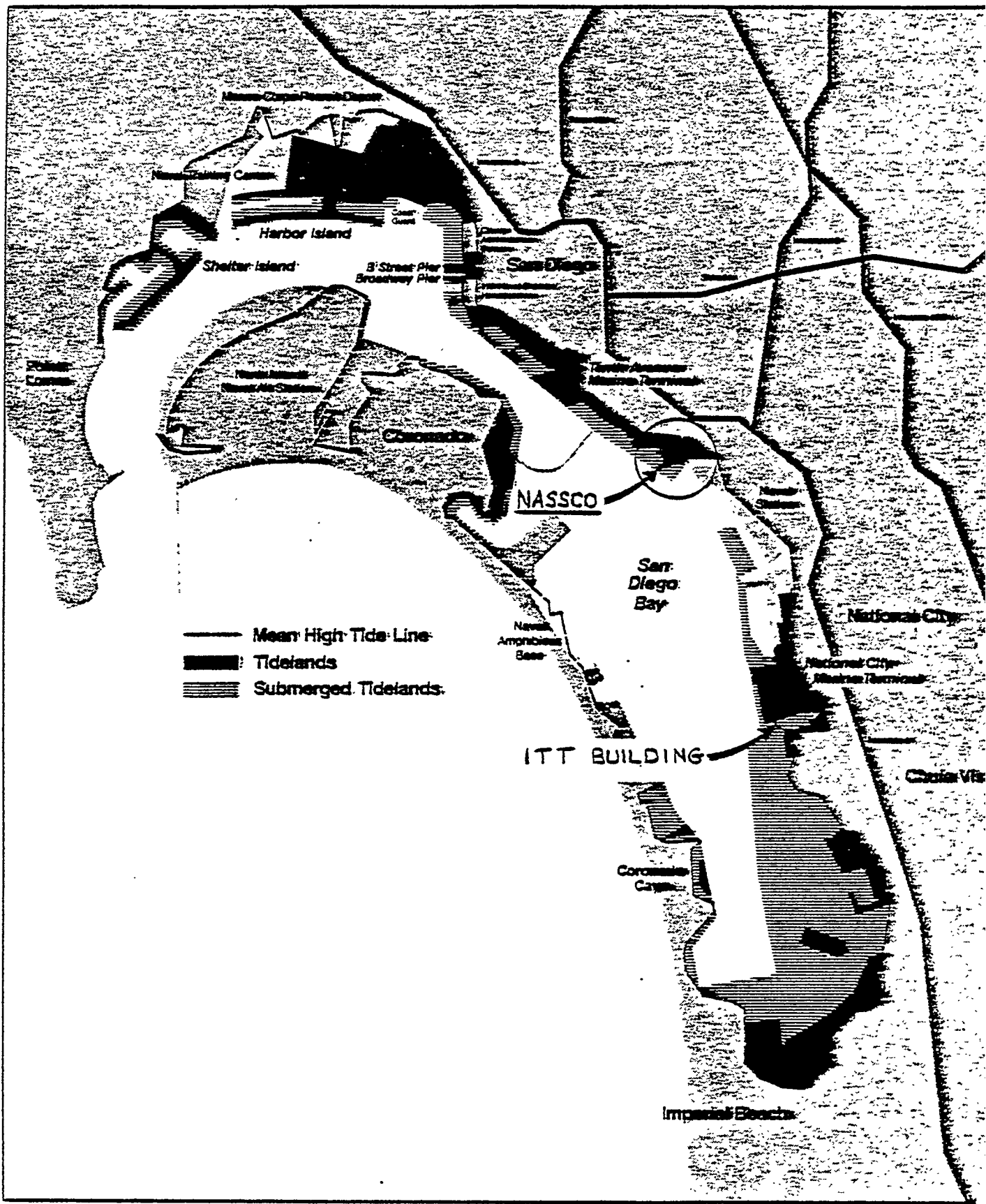
ADDITIONAL ANNUAL COSTS

		1982	1983	1984	1 9 8 5	1 9 8 6	1987	1988	1989	1990
Lease on ITI Property.		\$144,000	\$144,000	\$144,000	\$144,000	*144,000	\$144,000	\$144,000	\$144,000	\$144,000
Increased trans- portation rests between sites.	-o-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
cost of lost additional revenue through closing foundry.	-o-	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
[Lease on Delta Property.	~o-	-o-	-o-	-o-	-o-	-o-	\$30,000	\$30,000	\$ 30,000	\$ 30,000
YEARLY ADDED ANNUAL, COSTS (1980 DOLLARS)	\$72,000	\$494,000	\$494,000	\$494,000	\$494,000	\$494,000	\$524,000	\$524,000	\$524,000	\$524,000

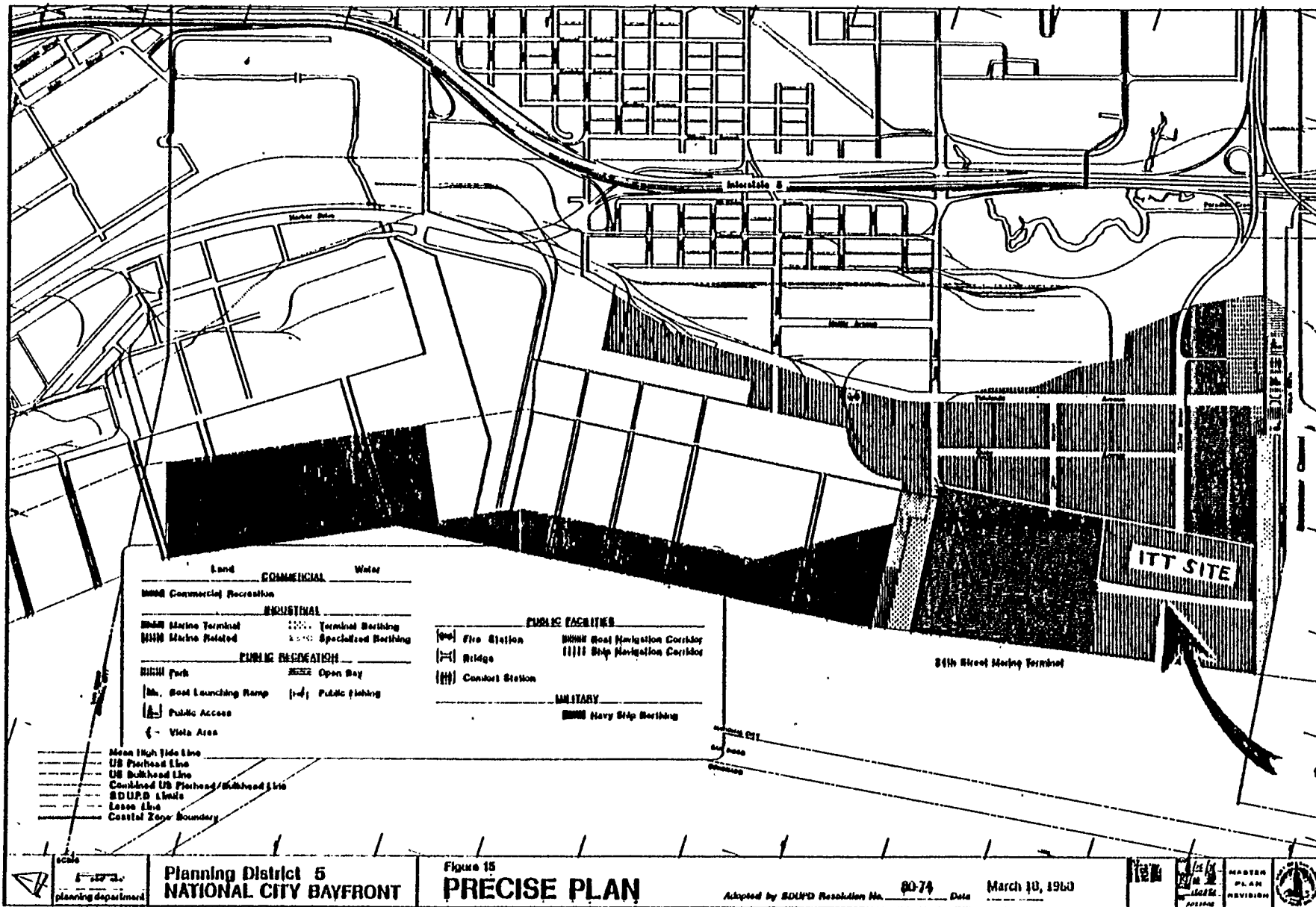
ANNUAL SAVINGS

	- m n -	1982	1983	-1984-	1 9 8 5	1986	- 1987	1 9 8 8	1 9 8 9	1990
Terminate Leases:										
2100 Tidelands Ave. (1)	\$54,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000
2200 Tidelands Ave. (1)	\$ 94,500	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000
Terminate lease;										
Office trailers	-o-	-o-	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000
Terminate lease:										
2380 Main Street										
San Diego	-o-	\$57,000	\$ 57,000	\$ 57,000	\$57,000	\$57,000	\$ 57,000	\$57,000	\$57,000	\$ 57,000
TERminate Lease:										
2400 Main Street										
Chula Vista	-o-	-o-	-o-	-o-	-o-	-o-	\$138,000	\$138,000	\$138,000	\$130,000
2402 Main Street										
Chula Vista	-o-	-o-	-o-	-o-	-o-	-o-	\$22,000	\$22,000	\$ 22,000	\$22,000
YEARLY SAVINGS										
[1980 DOLLARS)	\$148,500	\$651,000	\$794,000	\$794,000	\$794,000	\$794,000	\$954,000	\$954,000	\$954,000	\$954,000

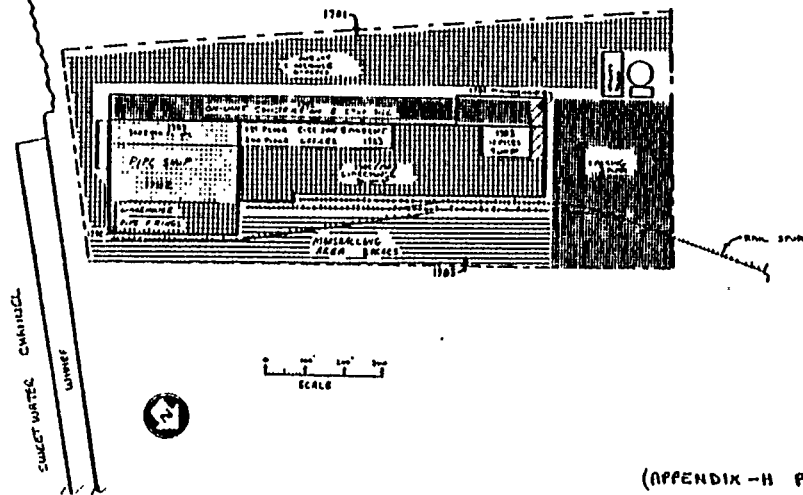
NOTES: (1) Last three months of 1981



	Scale	<h1>The Port's Planning Jurisdiction</h1>	Date <u>2/16/74</u> By <u>CS</u> No.	
	Planning Department			

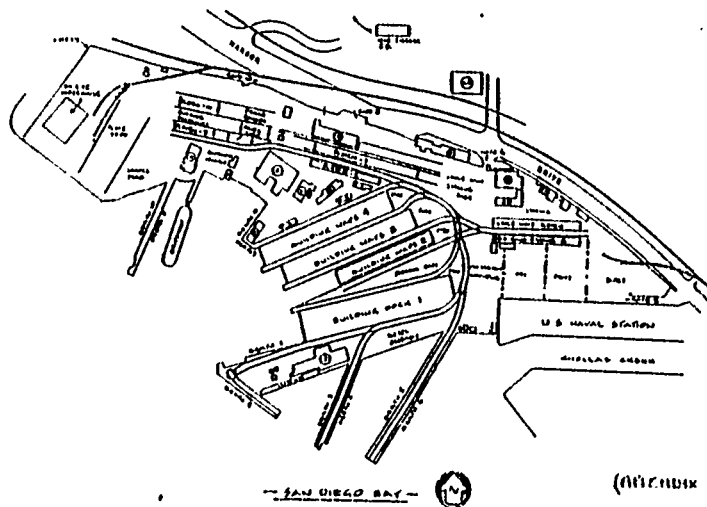


ITT BUILDING ON ITS OWN SITE

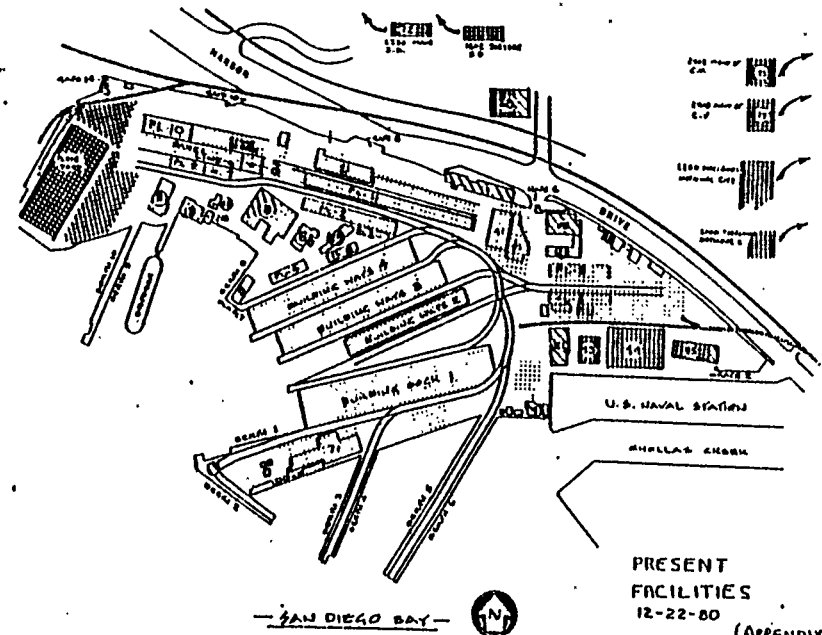


(APPENDIX -H P.100)

POTENTIAL 1987 MAIN YARD LAYOUT

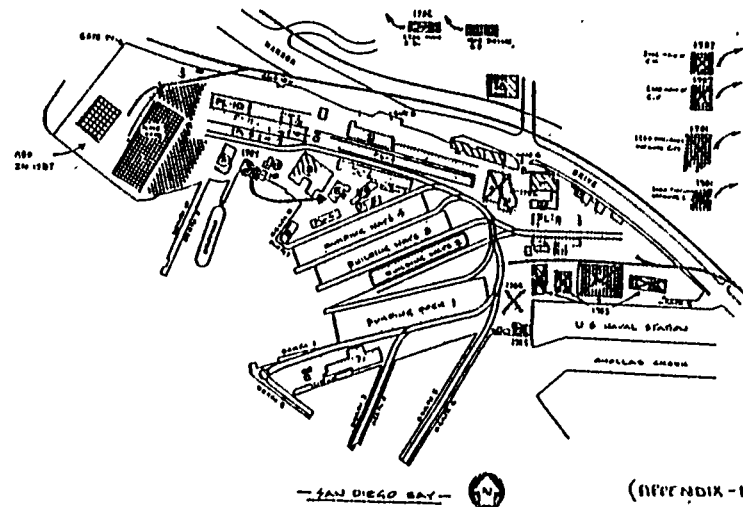


(APPENDIX -H P.102)



(APPENDIX -H P.110)

CHANGES TO PRESENT FACILITIES



(APPENDIX -H P.111)

5. ITT AND ADJOINING 20 ACRES

The proposed site is two adjoining parcels. One is 18 acres with a 321,000 square foot modern manufacturing facility, slightly more than 10% plus in offices, and the rest readily adaptable for manufacturing support shops and warehousing. The other parcel is 20 acres of relatively level, undeveloped, filled land. The waterfront has already been rip rapped thereby reducing the site permit usage cycle time. This Satellite site is of sufficient size to provide NASSCO ample room for facility expansion to meet the projected long range requirements.

Where the Satellite site becomes fully operational the main yard would be primarily a steel fabrication facility including all operations from steel plate and shapes receiving through storage, cutting, fabrication of sub-assemblies and assemblies, blasting, and painting, pre-outfitting and ship erection. Outfitting would primarily be performed at the main yard with the overflow being done at the Satellite yard. Major repair work would remain in the main yard as long as the current level is held. However, if repair work activity is increased or a large floating dry dock is acquired there is space readily available at the Satellite yard to accommodate such activities.

The Satellite site would primarily be a support-type facility, including Pipe Shop, Sheetmetal Shop, Electrical Shop and Machine Shop. All parts and raw materials for these support functions would be received and stored at this site. A major portion of NASSCO 's off ices will also be located at this site, including Design Engineering, New Construction Estimating, MOld Loft,

Purchasing, Contracts and Sup-Ships. This site will be used as a major marshalling area so that purchased parts and NASSCO manufactured assemblies can be sent to the main yard in kit form on an as-needed basis by road, railroad or barge.

Alternative 5 will provide almost immediate room for growth to allow NASSCO to maintain the flexibility to build virtually any mix of ships from 100% commercial to 100% non-combatant Navy. Should it become desirable to maintain a viable work force in the event of a down-turn in new-ship construction, space could be made available at the Satellite yard for other-than-maritime major assembly work.

INTERMEDIATE STAGES OF DEVELOPMENT

The following implementation schedule assumes a final approval by the Board of Directors no later than June 1981. Before continuing, fold out yard layouts on Page for reference.

1981 (last six months)

- * Acquire ITT Building.
- * Obtain long term lease from Port Authority for the property that the ITT Building occupies.
- * Obtain an option on the adjoining 20 acres. of Tidelands from the Port Authority.
- * Make ITT Building ready for Pipe Shop end warehousing
- * Move Tidelands warehousing onto ITT site (six acres-unpaved) .
- * Move Maintenance support into ITT Building.

1982

- * Move Pipe Shop into ITT Building.
- * Move warehousing functions into ITT Building from Building #68 and 72.
- * Make ITT Building ready for Electrical Shop, Mold Loft and offices.
- * Discontinue foundry business.
- * Demolish old Pipe Shop and foundry, blacktop area.
- * Start using on-unit construction and storage area.
- * Start permit cycle for wharf.

1983

- * Move Electrical Shop into ITT Building.
- * Move warehousing functions from Buildings #43 and 44 into ITT Building.
- * Move Mold Loft into ITT Building.
- * Move main yard receiving and issue warehouse from Building #45 to Building \$68.
- * Move into ITT offices (Engineering, N/C Estimating, Purchasing, etc.) .
- * Demolish Engineering. off ice Building #51, and Buildings *43,44 and 45,blacktop area and convert into blast, paint, dry and pre-erection area.
- * Blacktop three acres of marshalling area/future parking.
- * Move all personnel out of office trailers into offices opened by ITT offices.

1984

- * Move occupants of Building #42 into Building #15.
- * Demolish Building #42 and blacktop area.
- * Exercise option on adjoining 20 acres.
- * Obtain construction permits (City of National City) .
- * Prepare site; grading, roads, utilities, etc.
- * Tear down fence between ITT site and adjoining 20 acres and erect new fence at northwest end of the 20 acres.
- * Blacktop six acres for blue sky warehouse.
- * Move blue sky warehouse from unpaved area to paved site.

1985

- * Start and complete construction on Sheet Metal Shop (80,000 s.f.).
- * Start and complete construction on warehouse building (100,000 S.f.)

1986

- * Start dredging and construction on two 700 foot wharfs.
- * Move into new Sheet Metal Shop.
- * Move into new warehouse, eliminating the need for the remaining outside warehouses..
- * Demolish old. Sheet Metal Shop and blacktop area.
- * Blacktop four acres for marshalling area.
- * Start and complete construction on Machine Shop (50,000 s.f.,

1987

- * Complete wharf and start using for overflow outfitting and repair from the main yard.
- * Move into new Machine Shop.
- * Move Carpenter Shop (Bldg. #19), Transportation Office (Bldg. #78), Torch Repair (Bldg. #61), Outside Repair (Bldg.. #11), misc. offices (Bldg. #20), Ways Repair (Bldg. #18) and Template Storage (Bldg. \$26) into the old Machine Shop (Bldg. #8)..
- * Demolish Buildings #11,18, 19 and 20 and blacktop area.
- * Demolish Buildings #6 and 26 and blacktop area.
- * Demolish Buildings #61 and 78 and blacktop area.
- * Blacktop remaining open area at Satellite site for inprocess storage.
- * Acquire long lease on Delta Property.

FINANCIAL DATA RECAP

<u>YEAR</u>	<u>CAPITAL COST</u>	<u>CUMULATIVE CAPITAL COSTS</u>	<u>ADDITIONAL ANNUAL COST</u>	<u>ANNUAL SAVINGS</u>
1981	\$ 8,000,000	\$ 8,000,000	\$ 72,000	\$ 594,000
1982	1,283,000	9,283,000	494,000	651,000
1983	747,000	10,030,000	494,000	794,000
1984	2,640,000	12,670,000	654,000	794,000
1985	3,960,000	16,630,000	654,000	794,000
1986	10,582,000	27,212,000	654,000	1,076,000
1987	747,000	27,959,000	684,000	1,076,000
1988	-o-	27,959,000	684,000	1,076,000
1989	-o-	27,959,000	684,000	1,076,000
1990	-o-	<u>27,959,000</u>	684,000	1,076,000
TOTAL PROJECT CAPITAL COSTS.		\$27,959,000		

FINANCIAL DATA (1980 DOLLARS)

CAPITAL COSTS

1981

CUMULATIVE
CAPITAL
COSTS

* Acquire ITT Building (asking \$8,000,000 but believe that it can be picked up at \$6,000 ,000 or lower) .	\$ 6,000,000	
* Make manufacturing and ware-house area ready. (Structural, floor, and electrical upgrades.)	<u>2,000,000</u>	
TOTAL 1981 CAPITAL COSTS	\$ 8,000,000	\$ 8,000,000

1982

* Make office area ready (rehab. 30,000 s.f. of <i>existing</i> offices and construct 40,000 s.f.. within ITT Building) .	\$ 1,150,000	
* Demolish old Pipe Shop and foundry building. 35,000 S.f. at \$1.50/s.f.	53,000	
* Blacktop old Pipe Shop and foundry building area. 40,000 s.f. at \$2.00/s.f.	<u>80,000</u>	
TOTAL 1982 CAPITAL COSTS	\$ 1,283,000	\$ 9,283,000

CAPITAL COSTS- { continued)

<u>1983</u>		<u>CUMULATIVE CAPITAL COSTS</u>
* Obtain permits for wharf construction in 1986.	(1) \$ 100,000	
* Demolish Bldgs. #43, 44., 45 and 51. 110,000 S.f. at \$1.50/s.f.	165,000	
* Blacktop area of Bldgs:. #43, 44, 45 and 51.. 110,000 s..f. at s2. 00/s. f.	220.000	
* Blacktop three: acres of ITT property as a marshaling area at \$2. 00./s..f.	262,000	
TOTAL 1983 CAPITAL COSTS	\$ 747,000	\$10, 030, 000
<u>1984</u>		
* Demolish Bldg.. #42. 3,500 s.f. at \$1.50/s.f.	\$ 5,000	
+ Blacktop area of old Bldg. #42. 3,500 s.f. at \$2.00/s.f.	7,000	
* Obtain construction permits (City of National City).	5,000	
* Teardown fence between ITT and adjoining 20 acres and relocate to northwest end of the 20 acres.	100,000	
* Prepare 20 acre site; grading, roads, utilities, etc.	2,000,000	
* Blacktop six acres for blue sky warehousing at \$2.00/s.f.	523,000	
TOTAL 1984 CAPITAL COSTS	\$ 2,640,000	\$12,670,000

NOTE : (1) This figure could be \$10,000 to \$1,000,000 depending
on the unforeseen factors.

CAPITAL COSTS-(continued)

<u>1985</u>		CUMULATIVE CAPITAL COSTS
*	Start and complete construction on 80,000 s.f. Sheet Metal Shop at \$22.00/s.f.	\$ 1,760,000
*	Start and complete construction on 100,000 s.f. warehouse building at \$22.00/s.f.	<u>2,200,000</u>
	TOTAL 1985 CAPITAL COSTS	\$ 3,960,000
		<u>\$16,630,000</u>
<u>1986</u>		
*	Start construction on two 700' wharfs.	\$ 9,000,000
*	Demolish old Sheet Metal Shop 38,000 s.f. at \$1.50/s.f.	57,000
*	Blacktop old Sheet Metal Shop area. 38,000 s.f. at \$2.00/s.f.	76,000
*	Blacktop four acres for marshalling area at \$2.00/s.f.	349,000
*	Start and complete construction on a 50,000 s.f. Machine Shop at \$22.00/s.f.	<u>1,100,000</u>
	TOTAL 1986 CAPITAL COSTS	\$10,582,000
		<u>\$27,212,000</u>

CAPITAL COSTS- (continued)

1987

CUMULATIVE
CAPITAL
COSTS

* Demolish Bldgs. #11, 18, 19 and 20• 31,000 s.f. at \$1.50/ s.f. \$	47,000	
* Blacktop area of old Bldgs. #11, 18, 19.and 20. 31,000 s.f. at \$2.00/s. f .	62,000	
* .Demolish Bldgs. #6 and 26. 24,000 s.f. at \$1.50/s.f.	36,000	
* Blacktop area of old Bldgs. #6 and 26. 24,000 s.f.. at \$2.00/s.f.	48,000	
* Demolish Bldgs #61 and 78. 5,000 s.f. at \$1.50/s.f.	8,000	
* Blacktop area of old Bldgs #61 and 78. 5,000 s.f. at \$2.00/s.f.	10,000	
* Blacktop five acres at Satellite site for inprocess storage at \$2.00/s. f.	436,000	
* Move main yard north fence to . include Delta property.	100,000	
TOTAL 1987 CAPITAL COSTS \$	747,000	
TOTAL PROJECT CAPITAL COSTS		\$27,959,000

ADDITIONAL ANNUAL CCSTS

	1981	1982	1983	1984	1 9 8 5	1986	1987	1988	1989	1990
Lease on ITT site.	(1) \$72,000	\$144,000	\$144,000	\$144,000	\$144,000	\$144,000	\$144,000	\$144,000	\$144,000	\$144,000
Lease on adjoining 20 acres. (2)	-0-	-0-	-0-	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000
Increased transportation] costs between sites	-0-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Cost of lost additional revenue through closing foundry.	-0-	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
Lease on Delta property	-0-	-0-	-0-	-0-	-0-	-0-	\$30,000	\$ 30,000	\$30,000	\$30,000
YEARLY ADDED ANNUAL COSTS (1980 DOLLARS)	\$ 72, 000	\$494,000	\$494,000	\$654,000	\$654,000	\$654,000	\$684/000	\$684,000	\$684,000	\$684,000

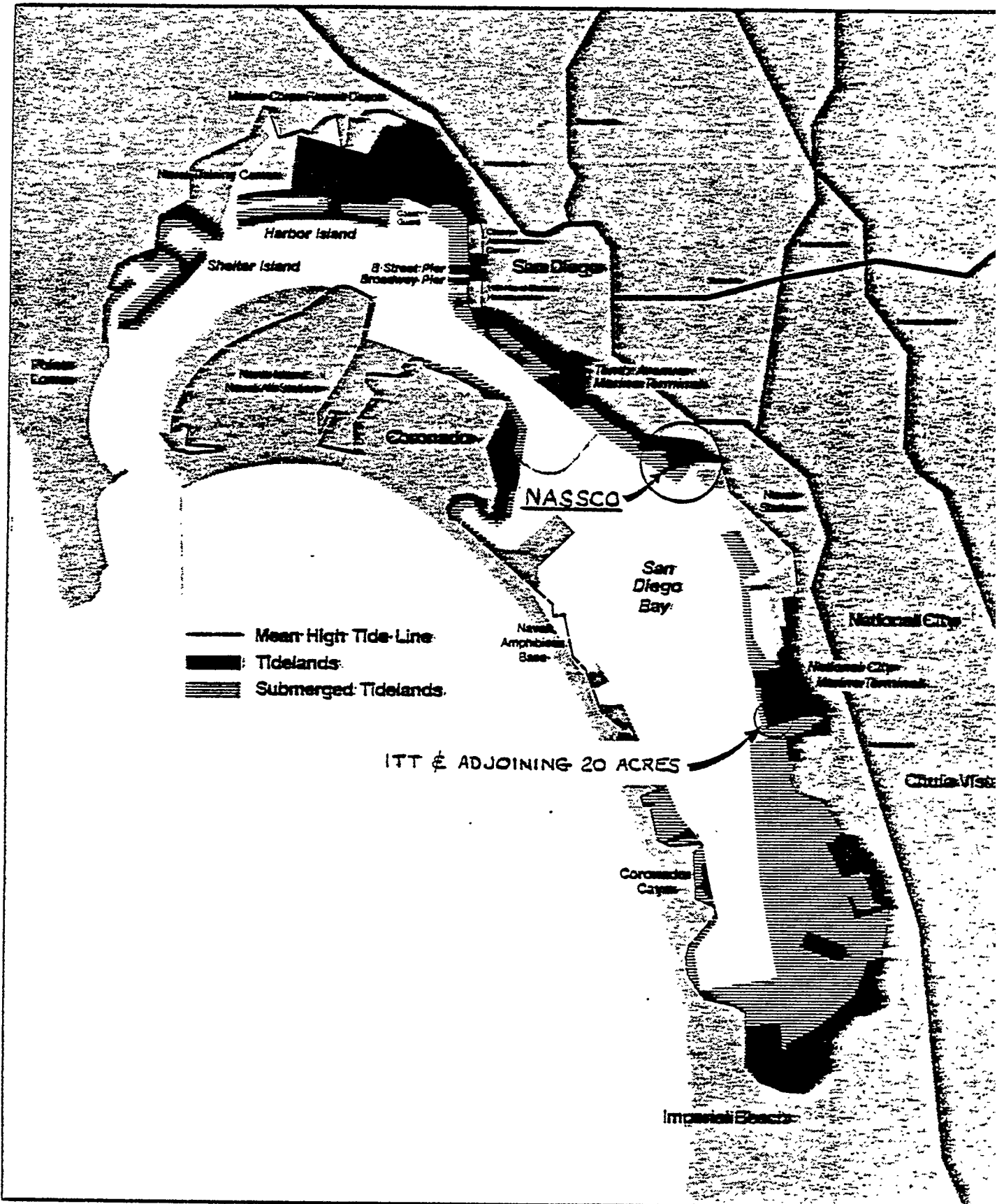
NOTES :

(1) last six months of 1901.

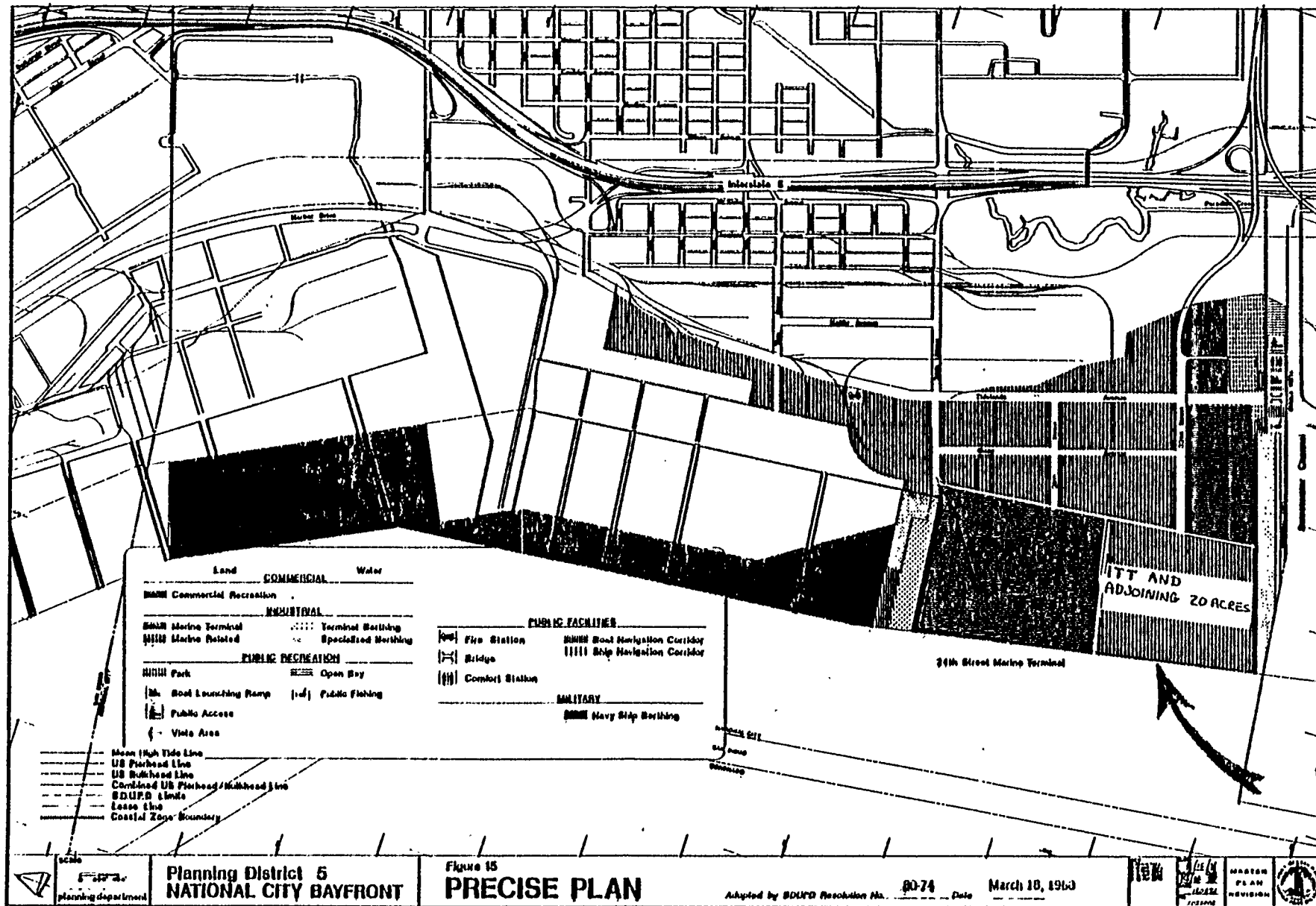
(2) No additional annual cost should occur until property is actually required. If it is stated in original negotiation with the Authority that NASSCO wants the right of first refusal.

ANNUAL SAVINGS

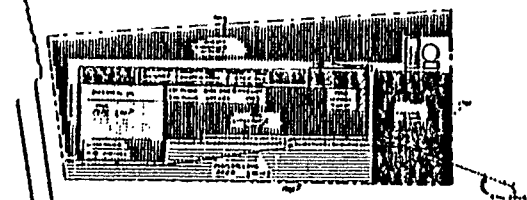
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Terminate Lease:										
2100 Tidelands Av.	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$ 216,000	\$ 216,000	\$ 216,000	\$ 216,000	\$ 216,000
2200 Tidelands Av.	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$ 378,000	\$ 378,000	\$ 378,000	\$ 378,000	\$ 378,000
Terminate Lease Office trailers	-0-	-0-	\$143,000	\$143,000	\$143,000	\$ 143,000	\$ 143,000	\$ 143,000	\$ 143,000	\$ 143,000
Terminate Lease 2380 Main Street San Diego	-0-	\$ 57,000	\$57,000	\$ 57,000	\$57,000	\$ 57,000	\$ 57,000	\$ 57, 000	\$ 57, 000	\$ 57,000
Terminate Lease: 2400 Main Street Chula Vista	-0-	-0-	-0-	-0-	-0-	\$ 138,000	\$ 138,000	\$ 138,000	\$ 138,000	\$ 138,000
2402 Main Street Chula Vista	-0-	-0-	-0-	-0-	-0-	\$ 22,000	\$ 22,000	\$ 22,000	\$ 22,000	\$ 22,000
1202 Sigsbee San Diego	-0-	-0-	-0-	-0-	-0-	\$ 122,000	\$ 122,000	\$ 122,000	\$ 122,000	\$ 122,000
YEARLY SAVINGS (1980 DOLLARS)	\$594,000	\$651,000	\$794,000	\$794,000	\$794,000	\$1, 076,000	\$1,0761000	\$1,076,000	\$1,076,000	\$1,076,000



	Scale	<h1>The Port's Planning Jurisdiction</h1>	Date: <u>2/10/74</u> Drawn: <u>KS</u> Checked: <u>KS</u> Approved: <u>KS</u>	
	0 8000'			



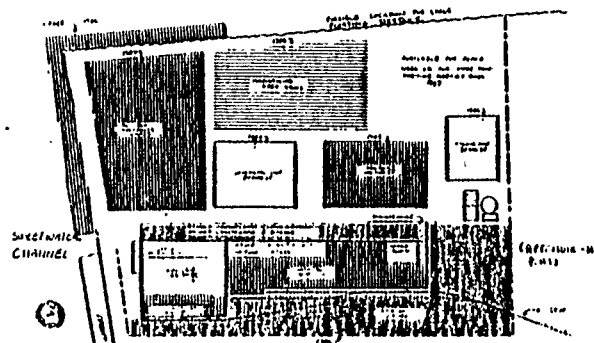
PHASE I 1961 - 1963
11T BUILDING PLUS OPTION ON ADDITIONAL
20 ACRES



(APPENDIX - H P. 102)

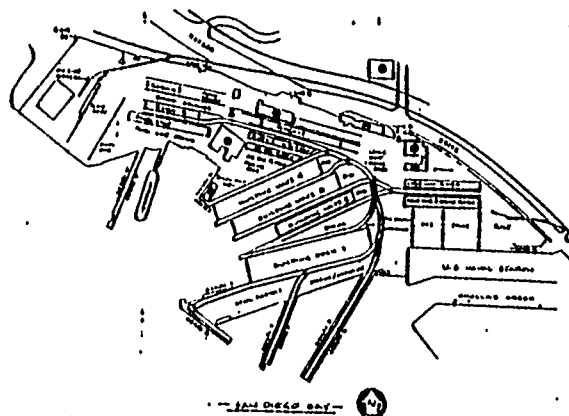
PHASE II 1974 1987
11T PLUS ADJUTING 20 ACRES

SAN DIEGO BAY

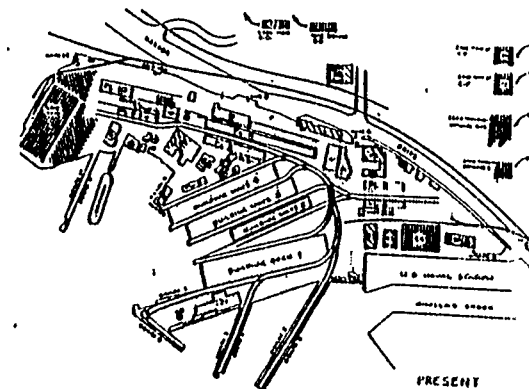


(APPENDIX - H P. 103)

POTENTIAL 1987 MAIN YARD LAYOUT

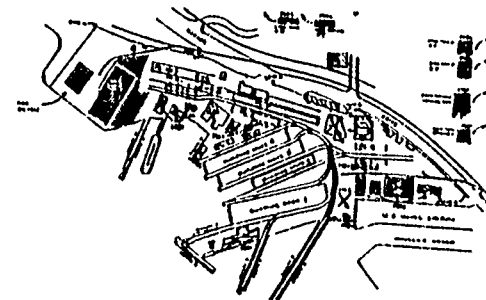


(APPENDIX - H P. 104)



POTENTIAL 1987
FACILITIES
1987-88 (APPENDIX - H P. 105)

CHANGES TO PRESENT FACILITIES



(APPENDIX - H P. 106)

6. GREENFIELD ON WATER BEHIND ITT

The proposed site is 20 acres of relatively Level, undeveloped, filled land. The waterfront has already been rip rapped thereby reducing the site permit usage cycle time over the Greenfield site which is without rip rap. The Satellite yard can be laid out in an optimum way to suit NASSCO's intermediate development plans.

When this Satellite site becomes fully operational the main yard will remain basically as it is now - doing steel construction. Outfitting and repair work would primarily be performed at the main yard with the over flow being done at the Satellite yard. The east end of the main yard will be opened up by the removal of the Engineering Building, and the warehousing in Buildings #43, 44 and 45. This will allow for the needed room to correct material flow through blast and paint plus space for pre-erection outfitting. The central part of the yard will be cleared for staging of intermediate-size assemblies for large unit construction on Platens #5, 6 and 7. This will be achieved by moving the Pipe Shop to the Satellite yard and discontinuing foundry activities.

The Satellite site would primarily be a support-type facility, including Pipe Shop and Electrical Shop. All parts and raw materials for the se support functions would be received and stored at this site. A major portion of NASSCO's offices will also be located at this site, including Design Engineering, New Construction Estimating, Mold Loft, Purchasing, Contracts, and Sup-Ships. This site will also be used as a kitting and marshalling area for pipe and electrical components which will be sent to the main yard on an as-needed basis by road or barge.

Alternative 6 will provide the additional acreage to allow NASSCO room for moderate growth and will enhance our current flexibility to build virtually any mix of ships from 100% commercial to 100% non-combatant Navy.

INTERMEDIATE STAGES OF DEVELOPMENT

The following implementation schedule assumes a final approval by the Board of Directors no later than June 1981. Before continuing, fold out yard layouts on Page 73 for reference.

June 1981 through December 1982

- * Obtain all permits, except waterfront related projects. (1)
- * Acquire long term lease on Tidelands property from the Port Authority.
- * Prepare site; grading, roads, utilities, etc.
- * Obtain building permits (City of National City).

1983

- * Start and complete construction of the Pipe Shop (70,000 s.f.) .
- * Blacktop 5.2 acres for blue sky warehousing.
- * Blacktop two acres for marshalling area.
- * Blacktop three acres for parking.
- * Start permit cycle for wharf construction in 1986.
- * Start engineering and permit cycle for new office building.

NOTES :

(1) +/- six months due to all governmental agencies approvals.

See Appendix-B as an example of a typical roadblock.

1984

- * Move into new Pipe Shop.
- * Move Tideland's warehousing onto Satellite site.
- * " Discontinue foundry business.
- * Demolish old Pipe Shop and foundry, blacktop area.
- * Start. and complete construction. on warehouse (80,000 s
- * Start and complete construction on office building (70,000 S.f.).

1985

- * Move warehousing. functions into Satellite site facilities from Bldgs. #43, 44 and 68.
- * Move into new. office building (Engineering, N/C Estimating, Purchasing, etc.) .
- * Move Bldg. #45 main yard receiving and issue warehouse to Bldg. #68..
- * Demolish Engineering Office Building #51, and Bldgs.. 44 and 45, blacktop area and convert into blast, -pain dry and pre-erection area.
- * Start and complete construction of Electrical Shop and warehouse building (42,000 s. f.) .
- * Start and complete construction of maintenance building
- * Move Building #42 occupants into Building #15.
- * Demolish Building #42 and blacktop the area.
- * Move all personnel out of office trailers into office opened up by new office building.

1986

- * Move into new Electrical Shop.
- * Move warehousing from Bldg. #72 into new Electrical Warehouse.
- * Move Carpenter Shop out of decaying Bldg. #19. and into the old Electric Shop (Bldg. #6).
- * Demolish Carpenter Shop and blacktop area.
- * Stark dredging and construction of 1,400 foot wharf.

1987

- * Complete wharf and start using for overflow outfitting and repair from the main yard.
- * Blacktop remaining two acres of parking.
- * Acquire long lease on Delta property and move warehousing from Bldgs #74 and 75 to Delta Building.

FINANCIAL DATA RECAP

<u>YEAR</u>	<u>CAPITAL COST</u>	<u>CUMULATIVE CAP ITAL COSTS</u>	<u>ADDITIONAL ANNUAL COST</u>	<u>ANNUAL SAVINGS</u>
1981	\$ 100,000	\$ 100,000	\$ -0-	\$ -0-
1982	3,005,000	3,105,000	160,000	-0-
1983	4,779,000	7,884,000	160,000	-0-
1984	4,343,000	12,227,000	510,000	594,000
1985	1,431,000	13,658,000	510,000	737,000
1986	10,053,000	23,711,000	510,000	794,000
1987	224,000	23,935,000	540,000	954,000
1988	-0-	23,935,000	540,000	954,000
1989	-0-	23,935,000	540,000	954,000
1990	-0-	<u>23,935,000</u>	540,000	954,000
TOTAL PROJECT CAPITAL COSTS		\$23,935,000		

FINANCIAL DATA (1980 COLLARS)

CAPITAL COSTS

<u>1981</u>		<u>CUMULATIVE CAPITAL COSTS</u>
*	Obtain all permits except water- front related projects.	
	\$ 100,000 ⁽¹⁾	
	TOTAL 1981 CAPITAL COSTS \$	\$ 100,000
<u>1982</u>		
*	Obtain building permits (City of National. City) .	\$ 5,000
*	Prepare site-level, roads, utilities, etc.	3,000,000
	TOTAL 1982 CAPITAL COSTS \$	\$ 3,105,000
<u>1983</u>		
*	construct 70,000 s.f. Pipe Shop at \$22.00/s..f..	\$ 1,540,000
*	Blacktop. 5.2 acres for blue sky warehouse at \$2.00/s.f..	453,000
*	Blacktop two acres for marshal- ling area and three acres for parking at \$2.00/s.f.	436,000
*	Obtain permits for wharf construction in 1986.	100,000 ⁽¹⁾
*	Engineering and design of 70,000 s.f. office building..	250,000
*	Power services building (boilers, air, compressors, etc.) .	2,000,000
	TOTAL 1983 CAPITAL COSTS \$	\$ 7,884,000

(1) This figure could be \$10,000 to \$1,000,000 depending on the unforeseen factors.

CAPITAL COSTS-(continued)

CUMULATI
CAPIT
COSTS

1984

* Demolish old Pipe Shop and foundry bldg. 35,000 s.f. at \$1.50/s. f.	\$ 53,000	
* Blacktop old Pipe Shop and foundry area. 40,000 s.f. at \$2.00/s.f.	80,000	
* Start and complete construction on 80,000 s.f. warehouse at \$22.00/s.f.	1,760,000	
* Start and complete construction on 70,000 s.f.. office building at \$35.00/s.f.	<u>2,450,000</u>	
TOTAL 1984 CAPITAL COSTS	\$ 4,343,000	\$12,227,

1985

* Demolish Bldgs.. :4.3, 44, 45 and 510 110,000 s.f. at \$1.50/s.f.	\$ 165,000	
* Blacktop area of Bldgs. #43, 44, 4`5 and 51. 110,000 s.f. at \$2\s.f	220,000	
* Construct 42,000 s.f. Electrical Shop and warehouse at \$22.00/s.f.	924,000	
* Construct 5,000 s. f. maintenance. building at \$22.00/s.f.	110,000	
* Demolish Building #42. 3,500 S.f. at \$1.50/s.f*	5,000	
* Blacktop area of old Building #42. 3,500 s.f. at \$2.00/s.f.	<u>7,000</u>	
TOTAL 1985 CAPITAL COSTS	\$ 1,431,000	\$13,658,0

CAPITAL COSTS- (continued)

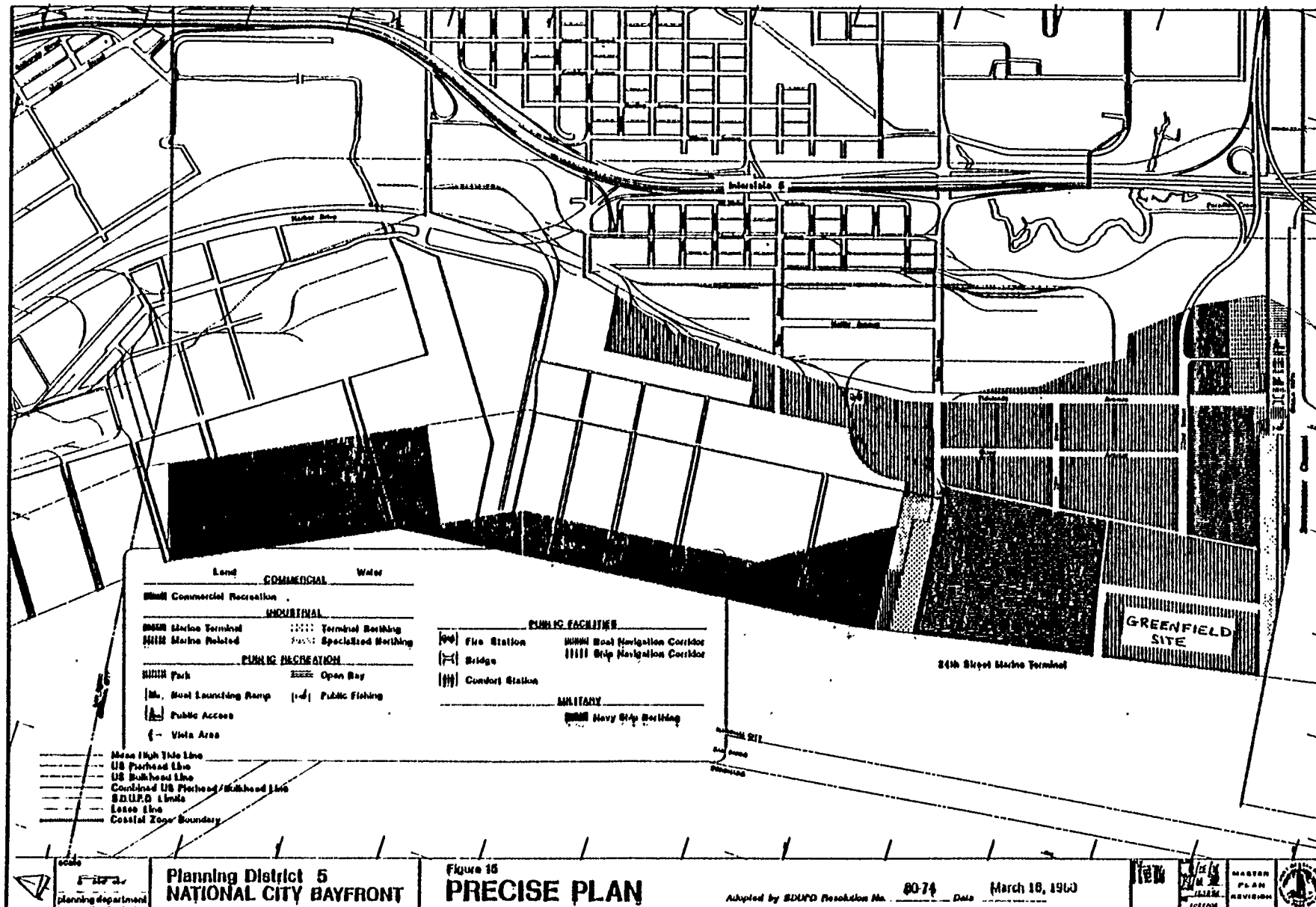
<u>1986</u>		<u>CUMULATIVE CAPITAL COSTS</u>
*	Demolish old Carpenter Shop Bldg.	
	#19. 15,000 s.f. at \$1.50/s.f. \$ 23,000	
*	Blacktop area of old Carpenter	
	Shop. 15,000 s.f. at \$2.00/s.f. 30,000	
*	Construct one wharf 1,400' long. 9,000,000	
*	Dredge wharf area. 1,000,000	
	TOTAL 1986 CAPITAL. COSTS \$10,053,000	\$23,711,000
<u>1987</u>		
*	Blacktop remaining two acres	
	of parking at \$2.00/s.f. \$ 174,000	
*	Relocate main yard west end	
	fence to inciude Delta <i>property</i>	
	in perimeter of yard.. 50,000	
	TOTAL 1.987 CAPITAL COSTS \$ 224,000	
	TOTAL PROJECT CAPITAL COSTS	\$23,935,000

ADDITIONAL ANNUAL COSTS

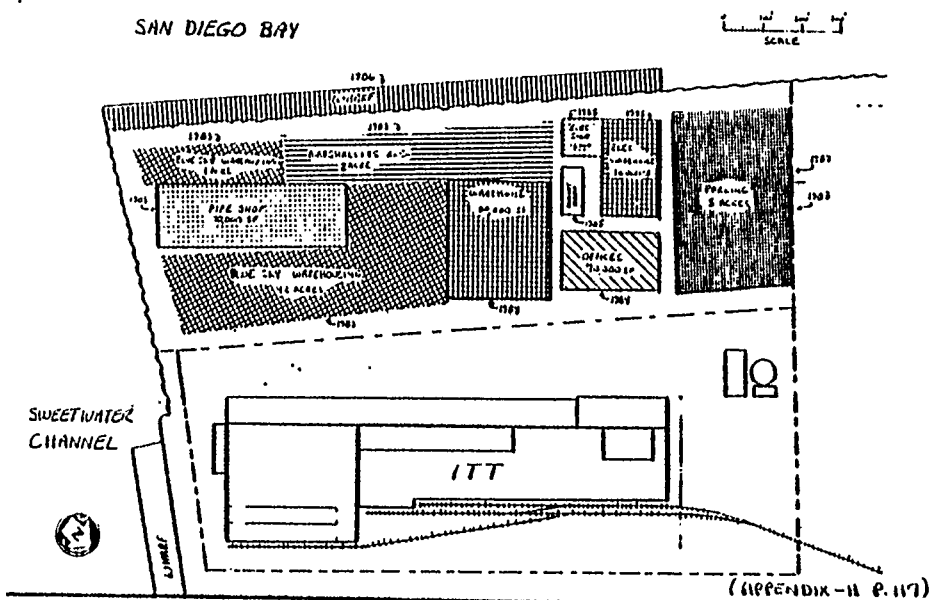
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Lease on Satellite Yard.	-0-	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000
Increased transportation costs between sites.	-0-	-0-	-0-	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Cost of lost additional revenue through closing foundry.	-0-	-0-	-0-	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
Lease on Delta property.	-0-	-0-	-0-	-0-	-0-	-0-	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
YEARLY ADDED ANNUAL COSTS. (1980 DOLLARS)	-0-	\$160,000	\$160,000	\$510,000	\$510,000	\$510,000	\$540,000	\$540,000	\$540,000	\$540,000

ANNUAL SAVINGS

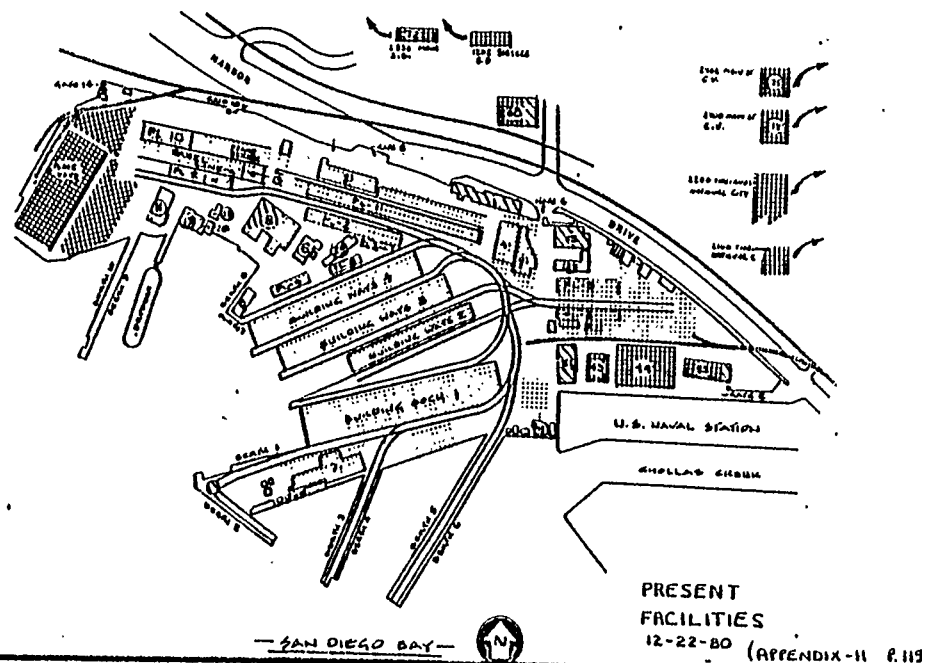
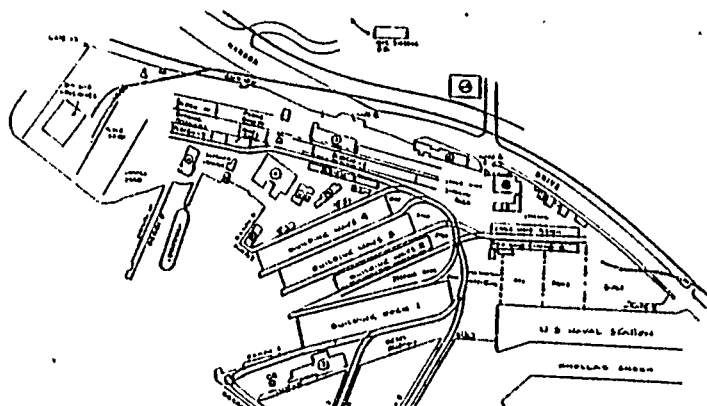
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Terminate Leases;										
2100 Tidelands Ave,	-0-	-0-	-0-	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000	\$216,000
2200 Tidelands Ave,	-0-	-0-	-0-	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000	\$378,000
Terminate Lease										
Office trailers	-0-	-0-	-0-	-0-	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000	\$143,000
Terminate Lease;										
2380 Main Street										
San Diego	-0-	-0-	-0-	-0-	-0-	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000
Terminate Lease:										
2400 Main Street										
Chula Vista	-0-	-0-	-0-	-0-	-0-	-0-	\$138,000	\$138,000	\$138,000	\$138,000
2402 Main Street										
Chula Vista	-0-	-0-	-0-	-0-	-0-	-0-	\$ 22,000	\$ 22,000	\$ 22,000	\$ 22,000
YEARLY SAVINGS										
(1980 DOLLARS)	-0-	-0-	-0-	\$594,000	\$737,000	\$794,000	\$954,000	\$954,000	\$954,000	\$954,000



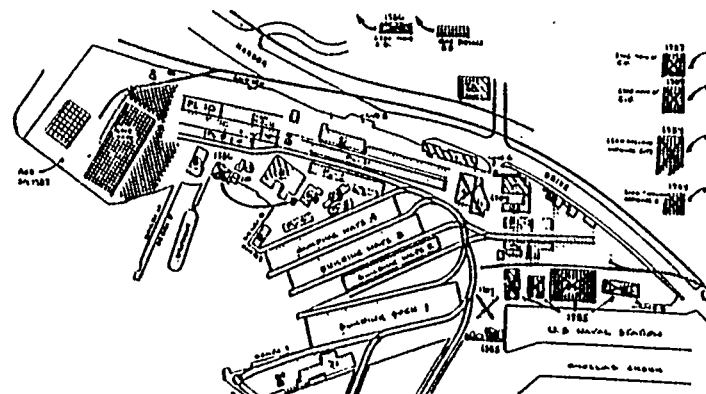
SAN DIEGO BAY



POTENTIAL 1987 MAIN YARD LAYOUT



CHANGES TO PRESENT FACILITIES



APPENDIX-A

Facilities recap matrix showing NASSCO's past facilities and growth from 1968 to present. The future facility requirements have been projected to the year 2000 based on NASSCO's past record.

<u>YEAR</u>	<u>EQUIVALENT SHIPS (3 YR. RL. AV.)</u>	<u>EQUIVALENT IMPACTED TONS (3 YR. RL. AV.)</u>	<u>NEW CONSTRUCTION DIRECT LABOR EMPLOYEES</u>
1968			
1969			
1970	3.2	17,400	
1971	3.5	15,900	
1972	2.8	14,100	
1973	2.1	23,200	
1974	2.9	39,700	3,300
1975	4.0	55,400	3,500
1976	5.3	66,900	4,300
1977	5.0	69,800	3,500
1978	4.3	69,100	3,500
1979	5.4	64,300	4,300
1990	6.4	78,000 (1)	4,400 (1)
<u>PROJECTIONS BASED ON HISTORICAL DATA</u>			
1981	6.0	83,000	4,200
1982	6.2	88,000	4,300
1983	6.4	92,000	4,500
1984	6.6	95,000	4,600
1985	6.8	99,000	4,800
1986	7.0	104,000	4,900
1987	7.2	107,000	5,000
1988	7.4	110,000	5,200
1989	7.6	113,000	5,300
1990	7.8	116,000	5,500
1995	8.8	124,000	6,200
2000	9.7	128,000	6,800

(1) Projection

FACILITIES RECAP MATRIX-CONTINUED

TOTAL EMPLOYMENT

<u>YEAR</u>	<u>PRODUCTION EMPLOYEES</u>	<u>NON-PRODUCTION EMPLOYEES</u>	<u>TOTAL EMPLOYEES</u>
1968	2,300	600	2,900
1969	3,000	700	3,700
1970	3,400	700	4,100
1971	2,40.0	6 0 0	3,000
1972	1,600	700	2,300
1973	2, 500	900	3,400
1974	3,700	900	4,600
1975	4.400	2,100	5,500
1976	5,300	1,200	6,500
1977	5,00.0	1, 200	6,200
1978	4,70.0	1,300	6,000
1979	5,.100	1,30.0	6,400
1980	5,200	1,600	6,800
<u>PROJECTIONS BASED ON HISTORICAL DATA</u>			
1981	5,700	1,500	7,200
1982.	5,800	1,600	7,400
1983	6,000	1,600	7,600
1984	6,200	1,700	7,900
1985	6,300	1,700 "	8,000
1986	6,500	1,800	8,300
1987	6,600	1,800	8,400
1988	6,800	1,900	8,700
1989	6,900	1,900	8,800
1990	7,000	2,000	9,000
1995	7,700	2,200	9,900
2000	8,400	2,400	10,800

FACILITIES RECAP MATRIX-CONTINUED

<u>YEAR</u>	<u>NASSCO CONTROLLED ACREAGE</u> (MINUS WATER)	<u>PRODUCTION ACREAGE</u>	<u>STORAGE ACREAGE</u>	<u>PARKING ACREAG2</u>
1968	77	-	.	7
1969	78		-	a
1970	78		-	a
1971	78	-	-	a
1972	78		-	a
1973	80	-	-	a
1974	95	24	33	9
1975	97	24	36	12
1976	98	26	42	12
1977	98	26	42	12
1978	100	26	44	12
1979	100	26	44	12
1980	101	28	43	12

PROJECTIONS BASED ON HISTORICAL DATA

1981	121	29	47	20
1982	124	30	49	21
1983	126	31	51	22
1984	128	32	53	22
1985	131	33	5 4	23
1986	135	34	5 6	23
1987	137	34	58	24
1988	140	35	59	24
1989	143	36	60	25
1990	145	37	62	26
1995	156	40	67	28
2000	162	42	71	31

FACILITIES RECAP MATRIX-CONTINUED

<u>YEAR</u>	<u>PLATEN SQUARE FOOTAGE</u>	<u>OFFICE SQUARE FOOTAGE</u>	<u>OUTFITTING BERTHS REQUIREMNTS</u>
1968			2
1969			6
1970	99,000		6
1971	99,000		6
1972	99,000		5
1973	126,000		2
1974	126,000	120,000	3
1975	138,000	145,000	4
1976	138,000	147,000	5
1977	138,000	164,000	4
1978	138,000	167,000	2
1979	138,000	186,000	3
1980	172,000	210,000	3
<u>PROJECTIONS BASED ON HISTORICAL DATA`</u>			
1981	183,000	216,000	5
1982	185,000	227,000	5
1983	193,000	237,000	5
1984	190,000	249,000	5
1985	189,000	261,000	6
1986	1.98,000	275,000	6
1987	193,000	286,000	6
1988	198,000	296,000	6
1989	203,000	309,000	6
1990	210,000	322,000	6
1995`	211,000	373,000	7
2000	228,000	421,000	7

APPENDIX-B

Examples of potential regulatory hurdles
facing expansion, especially for a Greenfield
site on water.

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources



EDMUND G. BROWN JR.
GOVERNOR OF
CALIFORNIA



THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Conservation Corps
Colorado River Board
Energy Resources Conservation
and Development Commission
Regional Water Quality
Control Boards
San Francisco Bay Conservation
and Development Commission
Solid Waste Management Board
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control
Board

Colonel Gwynn A. Teague
U.S. Army Corps of Engineers
Los Angeles, CA 90053

DEC 5- 1980

Public Notice 80-306 (National Steel and shipbuilding)
Proposal to place fill, San Diego Bay, San Diego County.

Dear Colonel Teague:

The Department of Fish and Game (DFG) believes that the project as proposed is unacceptable. This is not a water dependent project. It would destroy marine habitat and organisms, however, without providing adequate compensation for these impacts.

To discuss this project with DFG personnel, the applicant should contact Rolf Mall, 350 Golden Shore, Long Beach 90802 or (213) 590-5155.

DFG suggests two alternatives for the applicant to consider:

1. Construct a pile-supported deck over the railway.
2. Bulkhead the entrance to the railway and place fill behind the bulkhead. This would reduce habitat loss to 0.11 acres. Compensation necessary for this loss could be provided by creating a new marine habitat area of equal value to that destroyed, enhancing an existing degraded marine habitat, or placing a habitat structure near the fishing pier at the Fifth Street Marina.

Given the above discussion, the State recommends that the Corps hold its permit in abeyance until the applicant eliminates or substantially reduces the project's adverse impacts on marine habitat.

Sincerely,

JAMES W. BURNS
Assistant Secretary :

cc: Department of Boating and Waterways
Department of Parks and Recreation
State-Water Resources Control Board
Department of Fish and Game
Wildlife Conservation Board
National Marine Fisheries Service
Applicant - National Steel and Shipbuilding company

Dept. of Water Resources
Dept. of Conservation
Caltrans
State Lands Commission
Coastal Commission
Fish & Wildlife Service

Regulatory miasma kills oil terminal

Calling its seven-year-old plan to build a \$10-million oil receiving terminal in Monterey Bay, Calif., an "exercise in regulatory futility," Pacific Gas & Electric Co., San Francisco, is abandoning the project.

PG&E wanted to build a terminal capable of handling vessels of up to 90,000 tons to serve its nearby 2,100-Mw powerplant. Instead, it will upgrade the existing terminal, which can handle ships of up to 60,000 tons.

A new terminal would have offered "positive environmental, operational and economic benefits," says Donald A. Brand, PG&E vice president for engineering. He notes that the proposed facility would have greater flexibility and the potential for substantial savings in fuel delivery costs, as well as a reduction in the risk of spills.

Since 1973, PG&E obtained permits and approvals for the project from 11 local, state and federal agencies. But the Corps of Engineers denied the last permit needed and also turned down a subsequent appeal.

Company disillusion with regulatory procedures led to its decision to drop the plan rather than go to court. □

APPENDIX-C

Indication of potential opposition from the
City of Chula Vista to a shipyard *at the*
Sweetwater Chula Vista site.

Panel Clears Chula Vista Marina Plan

By LORI WEISBERG

Staff Writer, The San Diego Union

CHULA VISTA — Plans for a 600-slip marina and recreational vehicle park — destined to open to the public — what is now a largely barren strip of land along Chula Vista's bayfront — have been approved by the San Diego Coast Regional Commission.

The proposed \$8.5 million project, to be developed by David Wilson and his son, Bud, of Chula Vista, previously had gained preliminary approval from the Unified Port District.

Although the site lies within Chula Vista city limits behind Rohr Industries on the northern side of the J Street boat basin, the port district has jurisdiction over the property.

Paul Desrochers, the city's community development director, said the project will be a boon to the area, drawing residents and visitors to an underutilized section of the bayfront.

"We think it will be the first positive use of the bayfront since we started our plan 10 years ago," Desrochers said. "The marina part, that will turn the area around 180 degrees. People will be able to keep their boats there instead of bringing them back and forth."

The project area is east and north of the bayfront area that Chula Vista has planned to redevelop. The state Coastal Commission approved the city's plan last year, but it imposed conditions the city found unacceptable. Chula Vista sued the commission over the conditions and the case is scheduled to go to trial next month.

The Wilson project, approved by the San Diego Coast Regional Commission last Friday, calls for a 237-space RV park on 12 acres adjacent to the marina, which is to encompass 20 acres of water, Bud Wilson said.

Before construction can proceed, Wilson said other permits must be secured and the port district must give final approval. Construction of the RV park is scheduled to begin in February and to be completed next summer, Wilson said.

Coinciding with the Wilson project is a proposal by the port district for a park along the shore north of the boat basin and a 700-foot pier to extend from the northern edge of the marina area.

The district also plans to build a breakwater extending northward from the tip of the existing boat launch ramp and to line the banks of the project area with rocks to protect the shoreline from erosion.

The port district's proposal on the second project concerning the pier and park will be considered by the Coast Regional Commission on Nov. 21.

APPENDIX-D

Potential opposition to main yard expansion
northward across Harbor Drive into the Barrio
Logan area.

Panel Approves Barrio Logan Community

A community plan designed to guide future development of the Barrio Logan area, one of the older residential communities in the city, was approved yesterday by the city Planning Commission.

- The plan next goes to the City Council.
- Nearly 1,000 acres is covered by the plan within the boundary of Commercial Street, Interstate 5, National City and San Diego Bay.
- The plan calls for the rehabilitation of existing houses, commercial and industrial development and development of new housing areas that now lie vacant or underused.

It also calls for development of a new major industrial park where the railroad yard and vacant Port of San Diego lands are adjacent to the Tenth Avenue Marine Terminal and a major rehabilitation of industrial land south and east of the San Diego-Coronado Bay Bridge.

The plan, which next goes to the City Council, also calls for expansion of the Lowell School site and development of a new elementary school incorporating cultural and community activities, higher education and a vocational training center.

One of the key controversial marked consideration of the plan again yesterday — the issue of a b which some residents have been about.

Others called for moderation, aim was co-existence between t and the business-industrial complex. Once the proposed plan is adopted, council any amendments, addition would have to be through a public process. A number of rezoning anticipated.

APPENDIX-E

Indication of current market value of
industrial property in the San Diego area.



Coldwell Banker
COMMERCIAL BROKERAGE COMPANY

November 7, 1980

Mr. Carl Caskey
National Steel & Shipbuilding Company
Harbor Drive & 28th Street
San Diego, CA

Dear Carl:

Hopefully, the following will serve to provide you with a basic feel for the approximate valuation of the facility you are presently leasing at 1346 South 28th Street.

On Tuesday afternoon, October 20, 1980, you were kind enough to walk me through the subject facility and give me a feel for the nature of the improvements. On Wednesday, November 5, 1980, I returned to the facility and, with the aid of a planimeter, I measured the perimeter of the facility (2 sides) . Based upon my calculations (which include some approximations) I estimate that you have approximately 26,000 square feet of enclosed building area plus an additional 1,500 square feet of covered loading dock.

I pulled out an assessor's plat map on the property, and the land area shown for the parcel of property is 25,264 square feet. I don't feel this is really accurate because it is my feeling that the fenced enclosure includes a portion of Colton Avenue, which has apparently been abandoned. At any rate, I am estimating that the building sits on approximately 37,000 square feet of land.

Carl, please keep in mind that some of these are approximations, but I feel will still serve as a reasonable basis from which to do a rough analysis.

First Of all, let's look at the property on a physical basis.

Land (say) 37,000 sq.ft. x \$6/sq.ft	\$222,000
Improvements (say) 26,000 sq.ft. x \$25/sq. ft. =	<u>\$650,000</u>
Total	\$872,000

I would say that the physical valuation is in an approximate range of \$850,000.00 to \$900,000.00.

Mr. Carl Caskey
November 7, 1980
Page 2

On an economic basis, basing the rental upon a 26,000 square foot building, including approximately 7,000 square feet of heated, air conditioned, computer/office area, and approximately 19,000 square feet of warehouse, the following rental ranges would be about "market" today.

7,000 sq.ft x 40¢/sq.ft. = \$2,800/mo.	x 35¢/sq.ft. =	\$ 2,950/mo.
19,000 sq.ft. x 25¢/sq.ft. = <u>\$4,850/mo.</u>	x 20¢/sq.ft. =	<u>\$ 3,800 /mo.</u>
Monthly rental range	\$7,650/mo	<u>\$ 6,250/mo.</u>

On an annual basis, this equates to a rental range of \$91,800.00 to \$75,260.00. Capitalizing these rents at 10%, we would arrive at the following market economic valuation range.

$$\frac{\$91,800.00}{10\%} = \$918,000.00$$

$$\frac{\$75,000.00}{10\%} = \$750,000.00$$

On a current market rental rate evaluation, this property could support a price in the range of approximately \$750,000.00 to \$928,000.00. That is a somewhat broad range, but I provided a fairly broad range for what that building could lease for today.

However, your current market rent cannot be ignored. Based upon the rent you are paying of \$4,167.00 per month through 1988, plus your five 10 year options to extend (at negotiated rents), the current economic valuation of the property would be derived as follows:

$$\$4,37/\text{mo} \times 12 \text{ nos.} = \$50,004 \text{ capitalized at } 10\% = (\text{say}) \$500,000$$

As you can see, the current long-term lease certainly limits the economic value of this property. Because of the lease, the current valuation of approximately \$500,000.00 is significantly below the value of the property if it were leased at current market rental rates.

Because of the great disparity between the market value of the property of approximately \$850,000.00 and the lease-limited valuation of approximately \$500,000.00, it could certainly be to someone's benefit to negotiate a purchase of the property at a price somewhere between these two values. It should also be kept in mind that the current sublessor will have to be compensated to relinquish his "sandwich" position in the leasehold interest of this property.

Mr. Carl Caskey
November 7, 1980
Page 3

Carl, I will certainly be pleased to provide you additional assistance and work with you should you elect to pursue this matter. Please don't hesitate to contact me if I can assist with any of your real estate requirements.

Best regards,

COLDWELL BANKER
COMMERCIAL REAL ESTATE SERVICE


Douglas N. Matheson
Senior Sales Consultant

DNM/pl

cc: Jay Knight

APPENDIX-F

Cost estimate for Butler type steel
building for manufacturing and office
space.

NATIONAL STEEL AND SHIPBUILDING COMPANY

INTER-DEPARTMENT MEMO

Date November 4, 1980

To: Tom Roach Dept. _____

Subject: Manufacturing Steel Building and office Space Cost Cost Estimate Job No... _____

From: Henri R. Ghilbert Dept. _____

Given Parameters.

Provide a steel building (Butler's type) with a total floor area of 300,000 square feet and accommodation for 500 of Site employees. This building would be required for manufacturing purpose and facilitate the Pipe Shop, Electrical Shop, Sheet Metal Shop, Warehousing as well as necessary production support shops. This building could be located anywhere in San Diego County. The building would have five bays each 60' -0" wide capable to support a five tons capacity crane per 200' -0" of Length. A eight inch reinforced concrete slab for heavy manufacturing would be provided for flooring. The building size would be 300' -0" wide x 1,000' -0" long with crane runway elevation of 30' -0" electrical power requirement of 2,000 KVA will be necessary as well as natural gas and other utilities.

" Steel Building Manufacture Contacted for Cost Estimate.

1. Soule' Steel Buildings (Ben Cairo) 277-6480
7111 Engineer Road. San Diego. California 92111
2. Pascoe (Don Rice) 582-0302
5234 El Cajon Boulevard San Diego, California
3. Butler Building System (Patrick Dunphy) 565-7272
4625 Brinell San Diego, California

Cost Estimate Data per Square Foot as of November, 1980.

Steel Building \$12.00. slab \$3.00. Lights \$2.00. Sprinklers and Fire Mains \$1.50. Compressed Air \$2.50. City Water \$1.00
Parking Area 3" Asphalt on 6" Base at \$2.00 Outdoor Manufacturing Area Paving \$2.50. Other costs will be Land needed 20 acres.
Inside utilities (electrical/natural gas/inert gas and oxygen) shop heating/cooling system, "restrooms, cranes and their runways, etc.

We can then establish a cost for an empty-

1. 250,000 square foot manufacturing building at \$22.00 =5,500,00
2. **100,000** square foot office area on two floors at \$35.00 =3,500,00
(200 square foot per employee, 50,000 sq. ft. first and second

Tom Roach
Manufacturing Steel Building and Office
Space Cost Estimate
Henri R. Ghilbert

November 04, 1980^{2.}

3. Parking Lot 250,000 square foot at \$2.00	=	500,000.00
4. Outdoor Manufacturing Area 250,000 square foot at \$2.50	=	625,000.00
5. Rest Rooms for 1,000 Employees/Shift	=	100,000.00
*TOTAL	=	10,115,000.00

*Not including:

Land cost/permits/inside power electrical/cranes and runway/
shop heating or cooling as required, air compressors/transformers
and power panel for distribution of 2,000 KVA.
(Estimated above \$8,000,000.00)

NOTE = This is only a budget type estimate at today's rate of
inflation. Please increase this cost estimate by 1.5%
per month after November 1980.

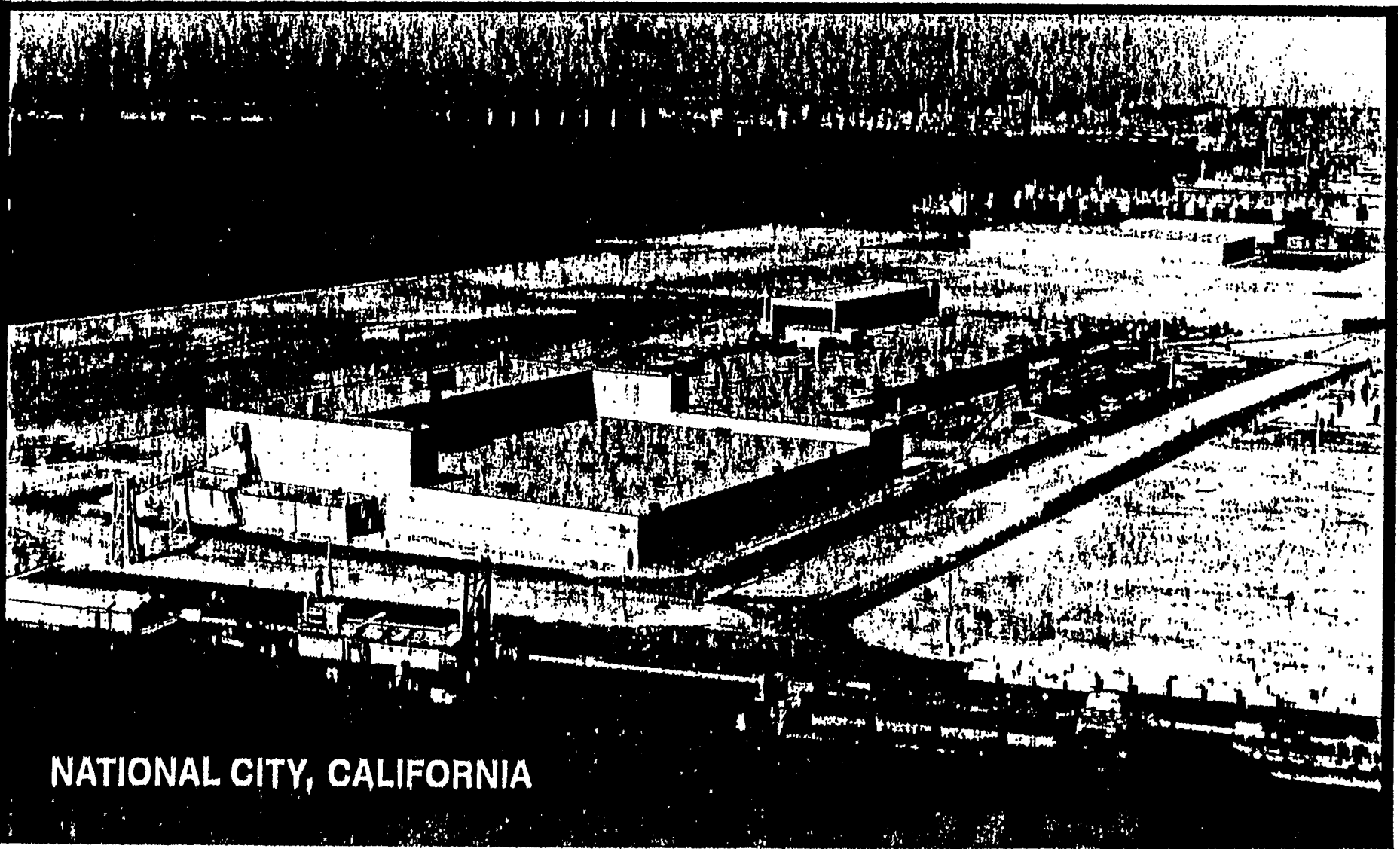
cc: J. Ruecker/
File

APPENDIX-G

Additional information on ITT site including
sales brochure.

For Sale

**321,523 SQUARE FOOT
MODERN MANUFACTURING FACILITY**



NATIONAL CITY, CALIFORNIA

\$8,000,000 for the improvements.

3040 Terminal Street,
National City, California

321,523 square feet, completed in 1971,
consisting of the following:

Area 1—2,960 square feet of main floor
(lab) area; 18,354 square feet of main
floor office space; 142,194 square feet of
main floor production area; one 489
square foot office; 32,284 square foot air-
conditioned mezzanine.

Area 1 total: 191,281 square feet.

Area 2—95,529 square feet of main floor
production area; one 591 square foot
main floor office space; 19,400 square
feet 3rd floor and 28' mezzanine; 14,700
square feet on 4th floor.

Area 2 total: 124,220 square feet.

Miscellaneous—Utility building (5,368
square feet), fork lift charging shed (240
square feet), guard house (72 square
feet), pump house (372 square feet).

Facility has two dock-high and five
ground-level loading doors. Truss height
ranges from 20 to 50 feet.

45 years remaining on the term. There
are an additional 19.4 acres available for
expansion to the west on a ground lease.

Immediately to the south of the facility is
a deep water channel with a 35-foot
mean low tide ship clearance.

Santa Fe Railroad serves the site with
four switches and 2,790 feet of track on
site.

One 75 ton gantry (Kranco Company)
with heavy pad, two four ton bridge-type
(Oranveveyor) Bay 2 between column line
KK and GG (60' span—280' long).

Electrical power source is 12,470 volts
primary to interior 480 and 208 volts
secondary substation. Secondary; 277
volt lighting; Buss ducting and dis-
tribution throughout; uninterruptible
power source. Four 2,000 KVA sub-
stations and one 2500 KVA substation
inside facility, rated to supply 8.4
megawatts.

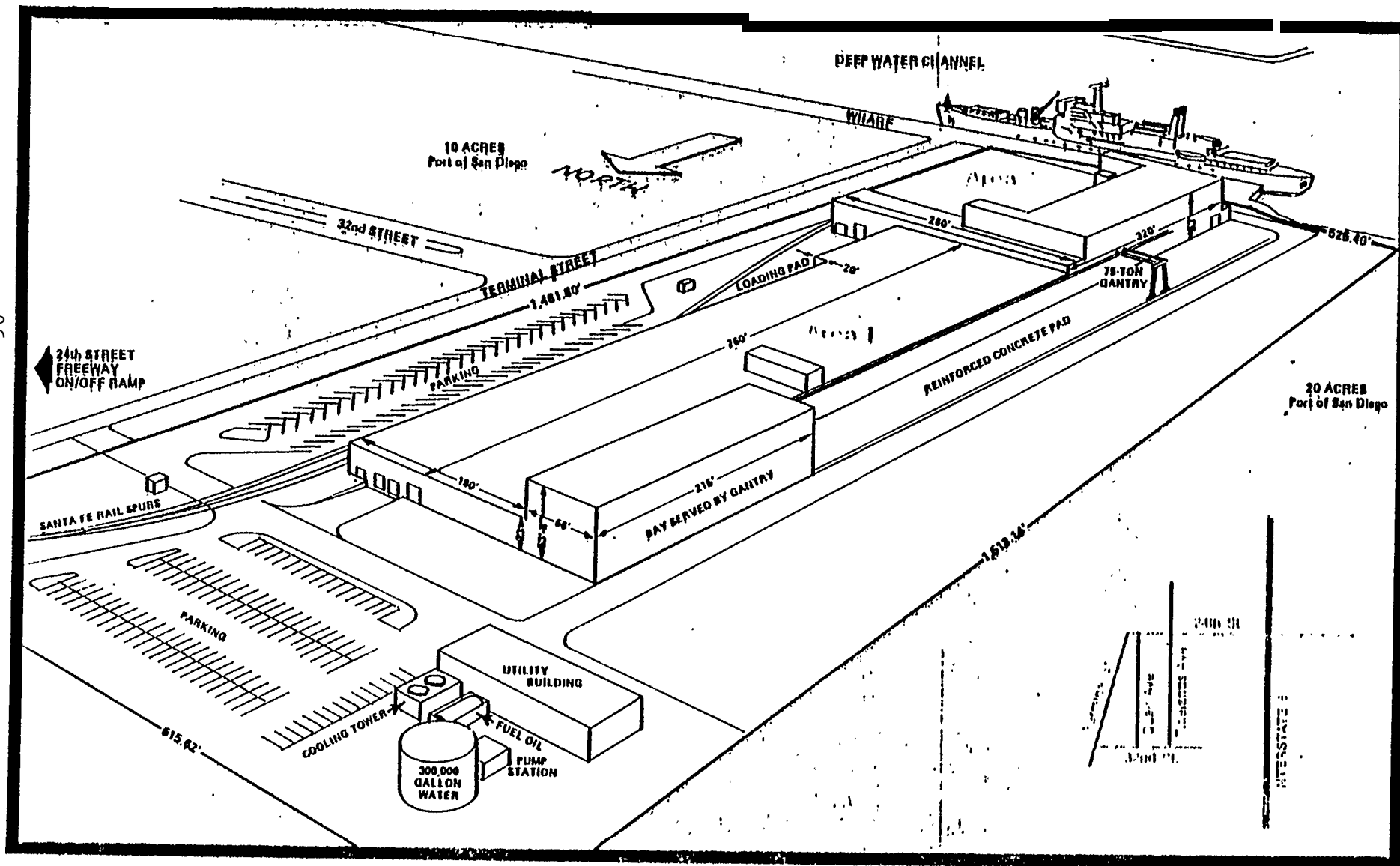
Natural gas serviced by San Diego Gas &
Electric Co. with a five-inch main at
15 PSI (current capacity two billion cubic

Air-conditioned throughout all office
space by 267-ton unit. Telephone system
is an ITT-T400A system with 200 lines,
13 trunk lines, four WATS lines.

Fire system sprinklers with 10-inch main,
150 PSI, supported by on-site 300,000
gallon storage tank with a 1,500 GPM
diesel pump. It is a wet system with
Honeywell controls and flow indicator.

Process water system (brine) consists of
Morley cooling tower (1,800 GPM),
Brunner water softener (105 GPM tank
flow with two 1,200 gallon upright tanks),
one ton of salt per 32,000 gallons of
water.

Steam generation: Three 250 HP boilers
(each boiler rated at 8625 lbs steam/
hour); 12,000 gallon fuel oil storage for
backup (oil and gas fired); two 600 cubic
foot per minute Joy compressors, 100 PSI
with stainless steel sleeves and Teflon
rings; air receiver at either end of utility
building.





November 12, 1980

Mr. Jim Rockline
352 Adobe Avenue
San Clements, CA 92672

Dear Jim:

Thank you for your expressed interest in the former ITT Cable manufacturing facility located in National City. As you can see from the enclosed brochure, this facility has some terrific amenities: deepwater port, rail, service, dock high and ground level loading, and convenient access to the interstate highway system and the San Diego International Airport.

The facility itself can be expanded and is available now. Improvements are available at a price substantially below the original construction cost, and greatly below today's replacement cost.

The building and improvements are available for \$8,000,000 and the owners are encouraging any reasonable offers. Land is on a long-term ground lease from the Port of San Diego, with approximately 45 years remaining. They have indicated that the ground rental payments will be approximately \$12,000.00 per month. ITT has also indicated a willingness to lease all or a portion of the building, which gives us added flexibility.

Jim, if your brother-in-law in Orlando is serious about moving his boat building business to the west coast, then I feel this is an opportunity which he should certainly not overlook.

We will also be pleased to provide you both with information regarding comparable land values throughout San Diego County.

Mr. Jim Rockline
November 12, 1980
Page 2

Please feel free to give Gordon Dunfee or me a call at your convenience with any additional questions or *expressions of* interest.

Sincerely,

COLDWELL BANKER
COMMERCIAL REAL ESTATE SERVICES

Douglas N. Matheson
Senior ~~sales~~ Consultant

DNM/pl
Enclosure

cc: Gordon Dunfee

APPENDIX-H

Larger scale layouts of main yard and potential
Satellite yards for each alternative.

LEGEND


Production Areas

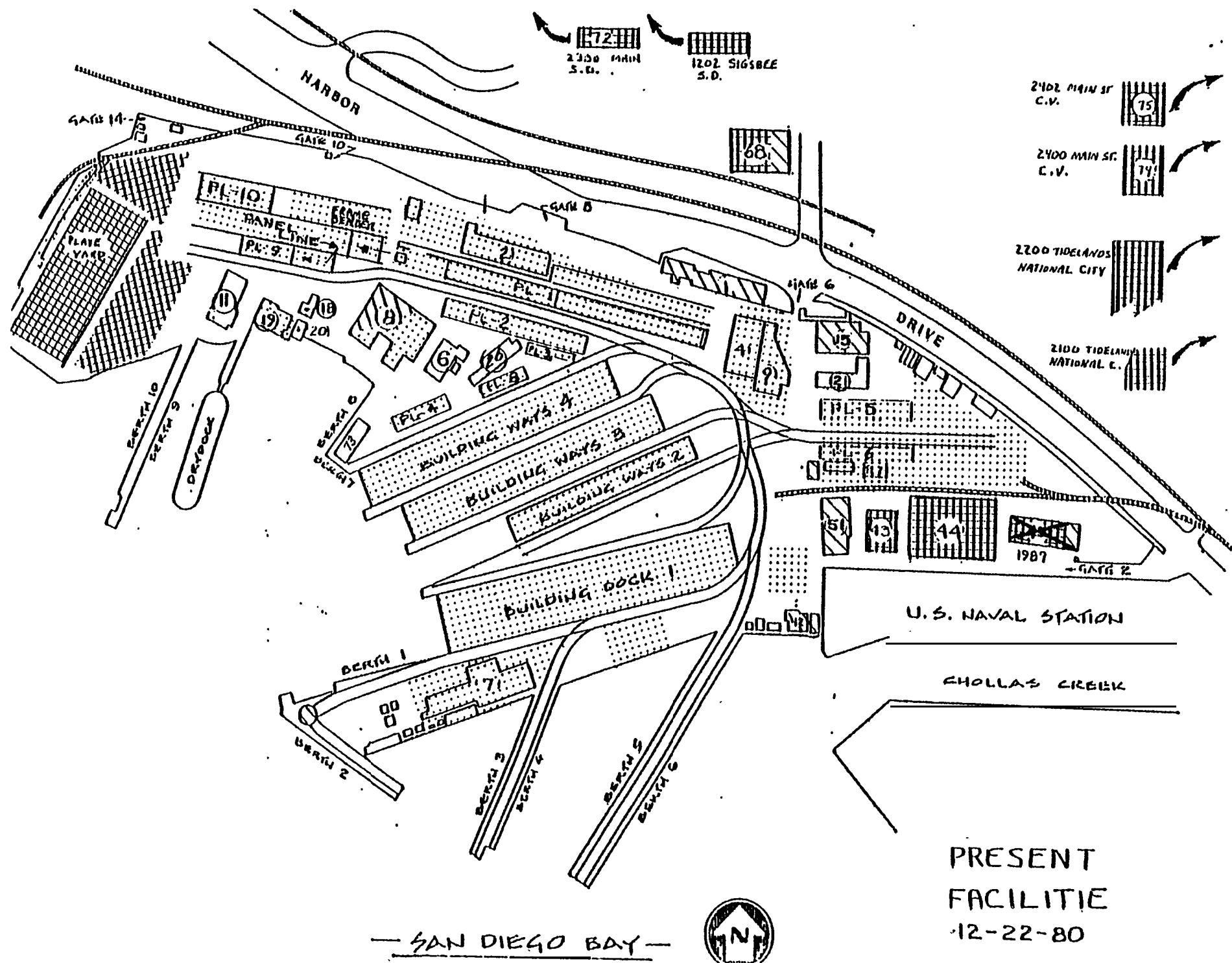
Storage Areas 

Offices 

Parking 

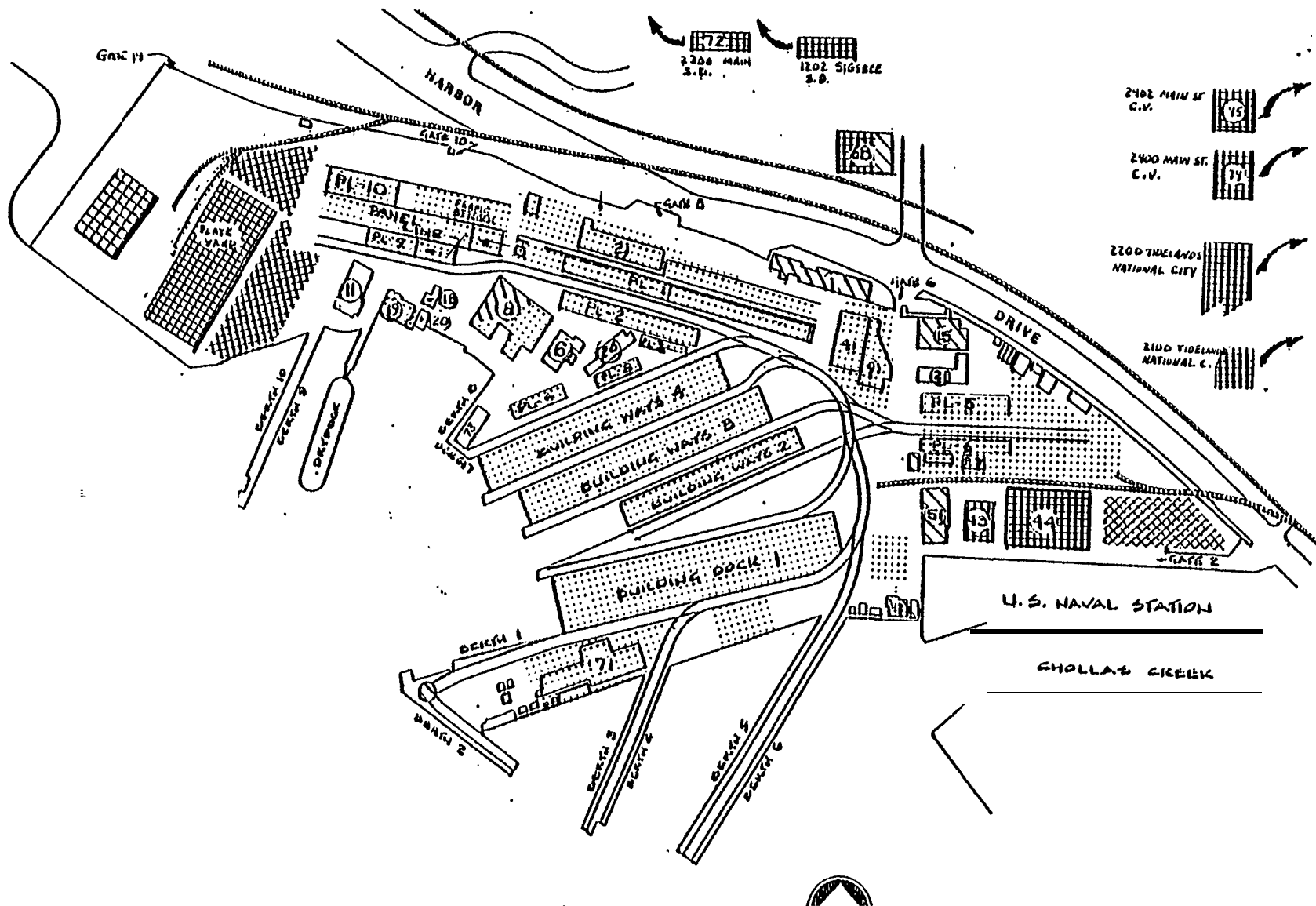
Marshalling Area.. . . . 

Wharfs (new) 



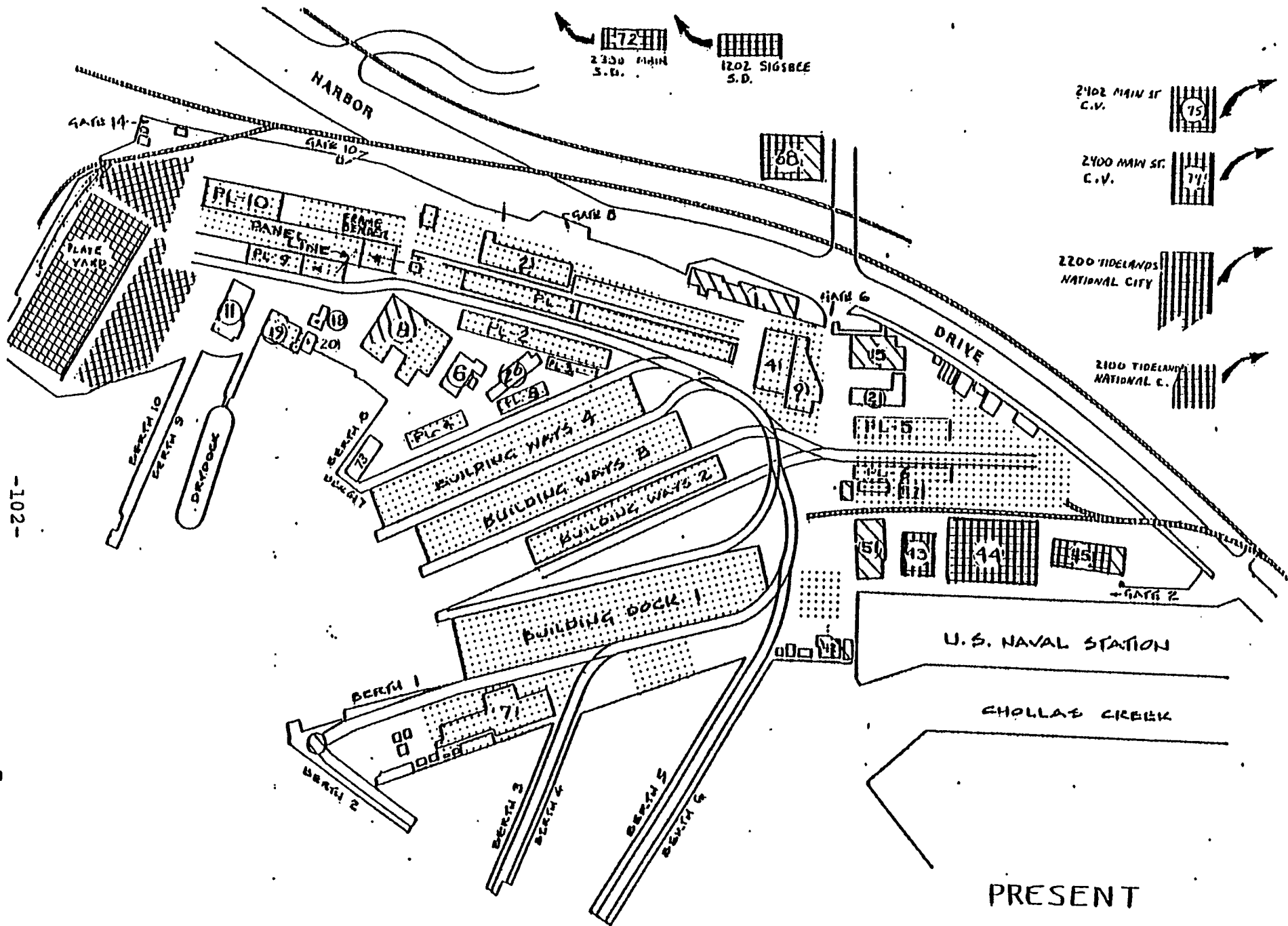
INCLUDES DELTA PROPERTY

INCLUDES DELTA PROPERTY



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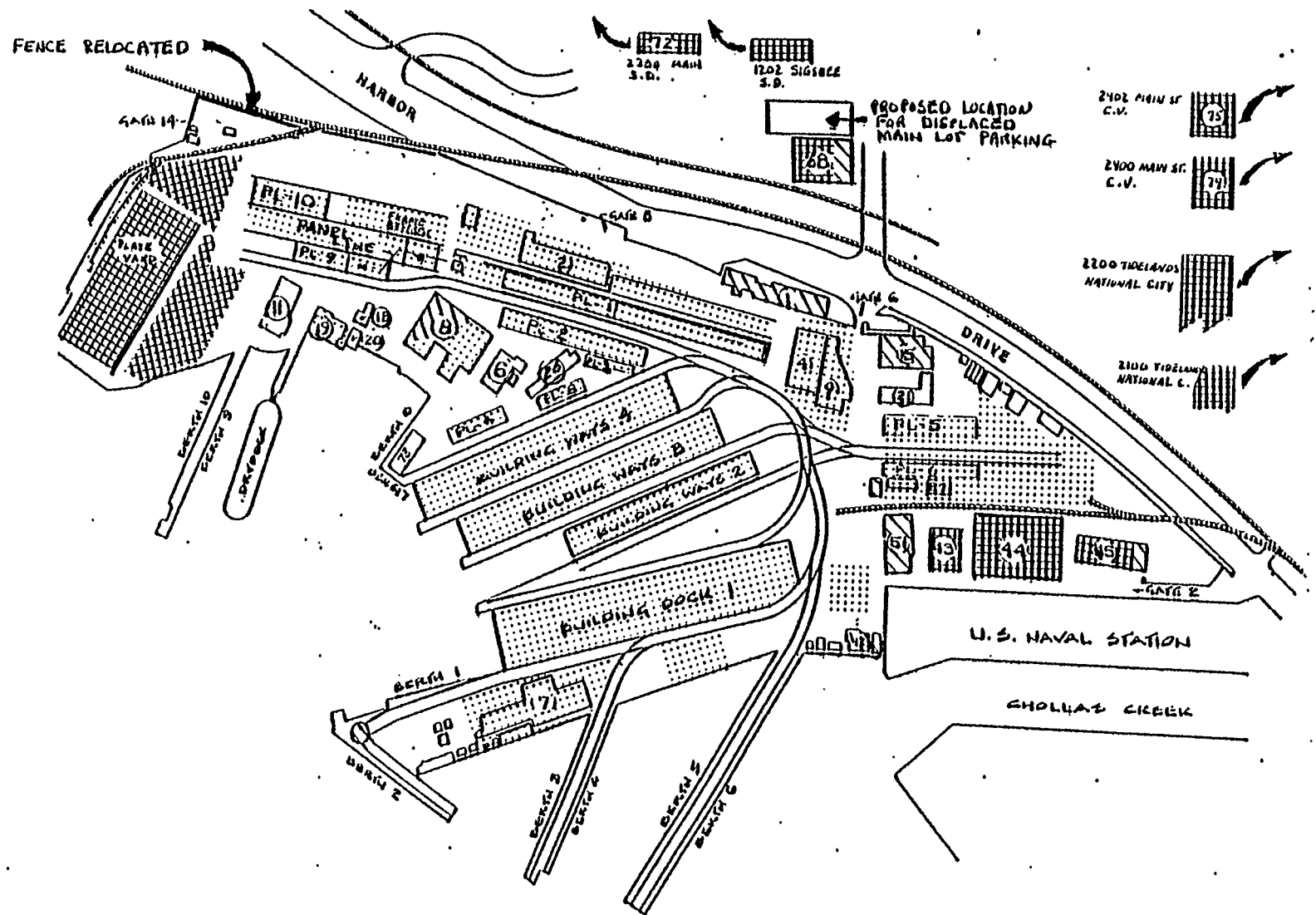
— SAN DIEGO BAY —



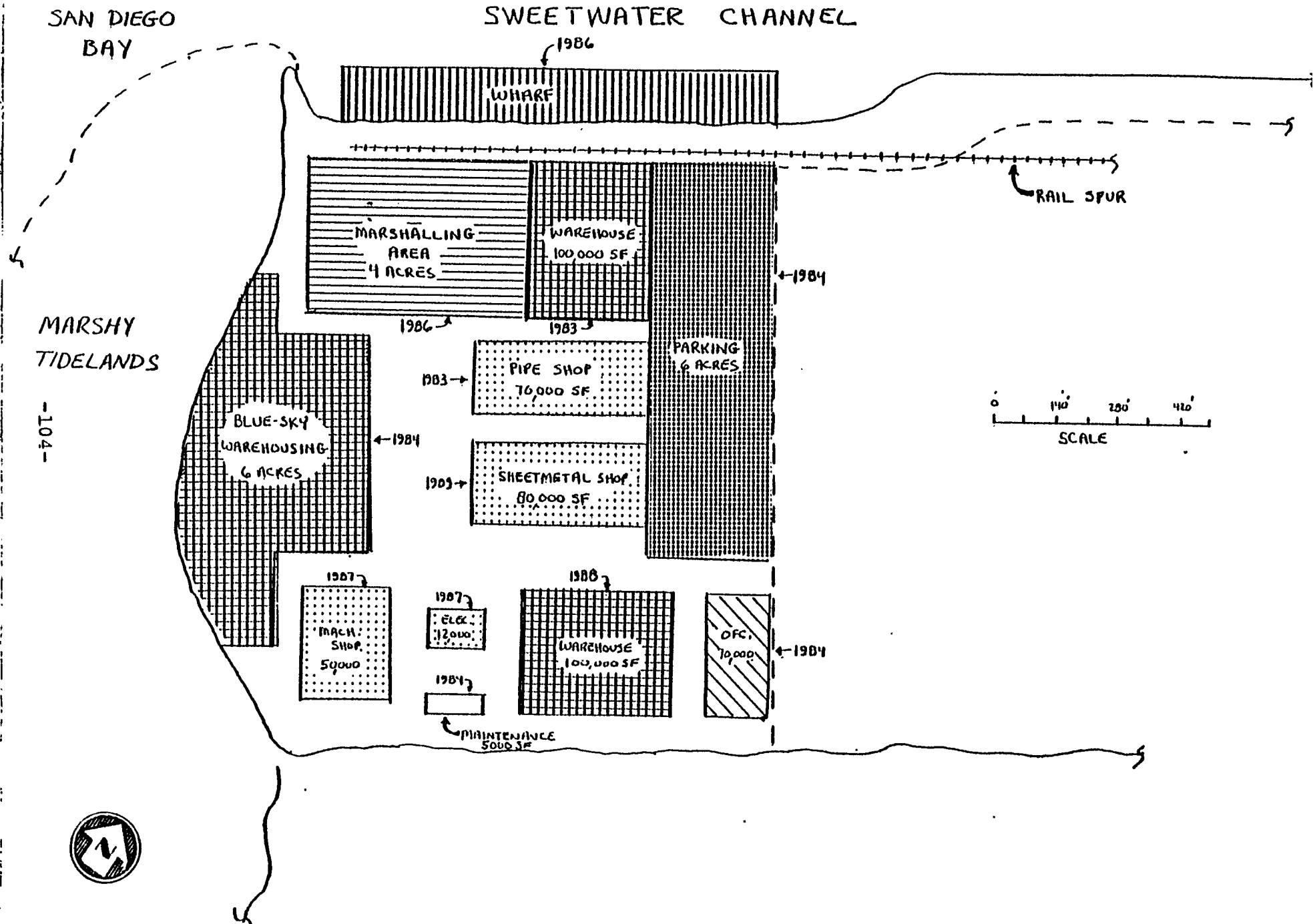
PRESENT
FACILITIES
12-22-80

NEW MAIN YARD LAYOUT

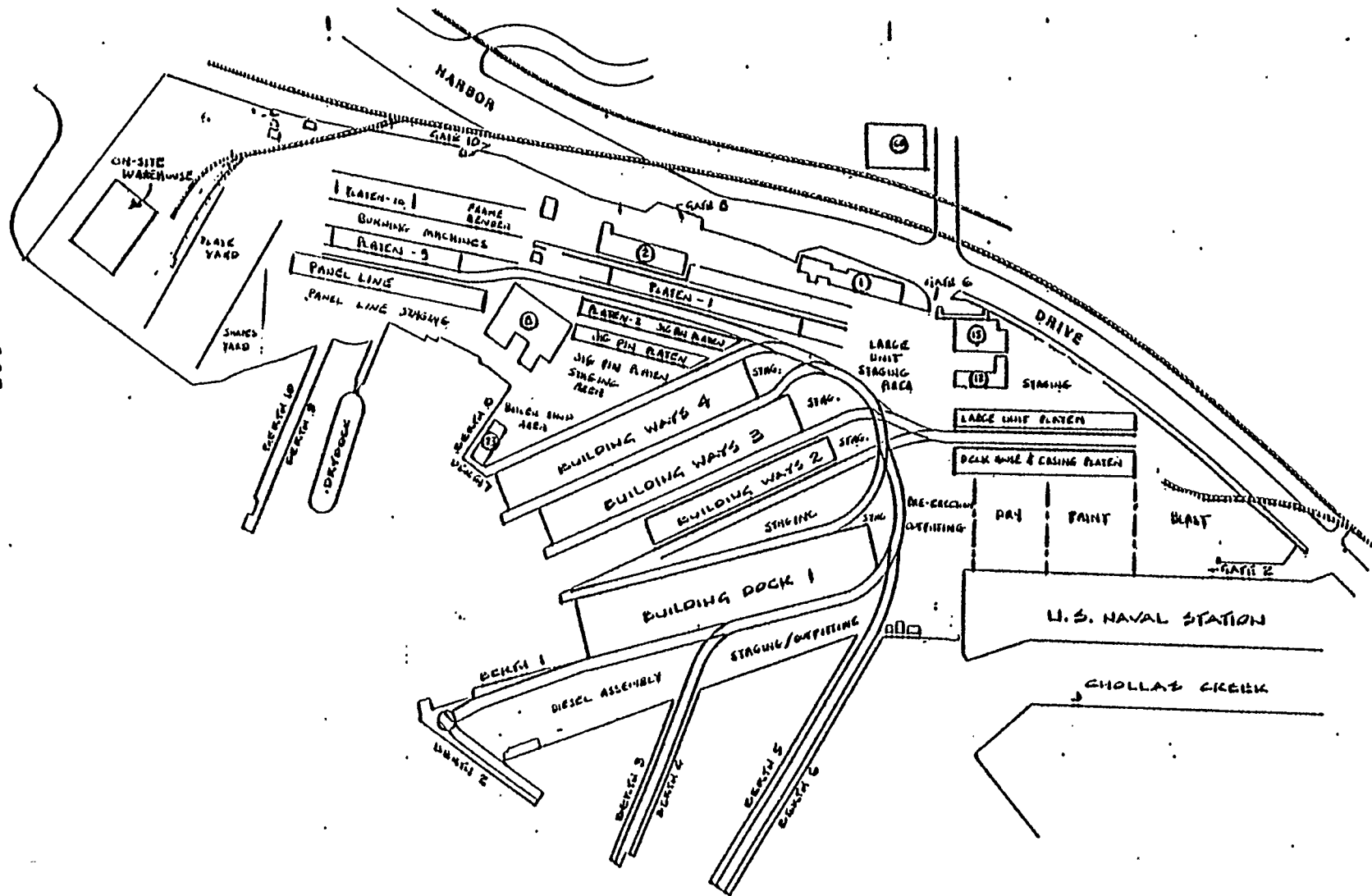
INCLUDES MOVE MAIN LOT PARKING FENCE NORTH



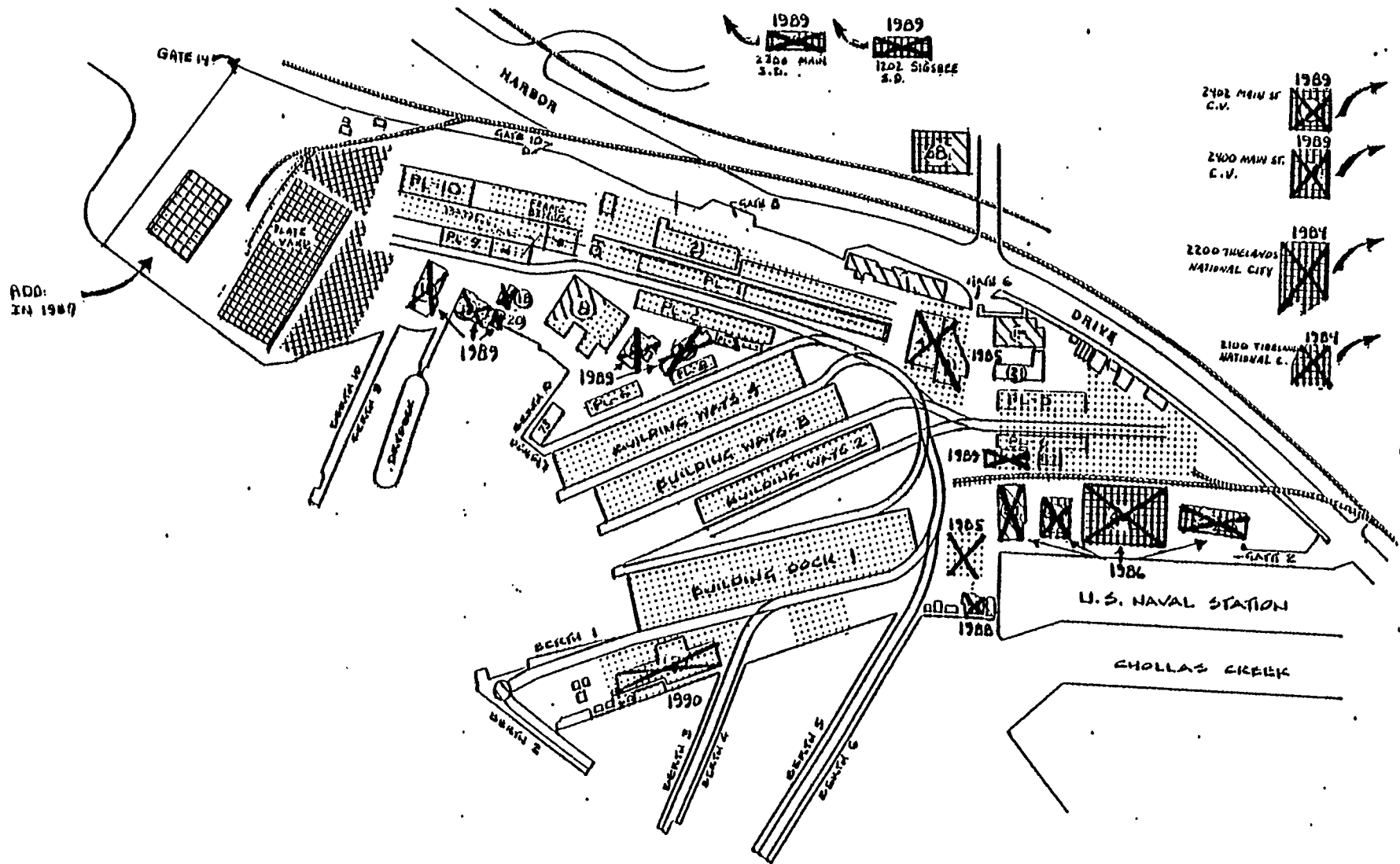
GREENFIELD ON WATER-CHULA VISTA SWEETWATER SITE



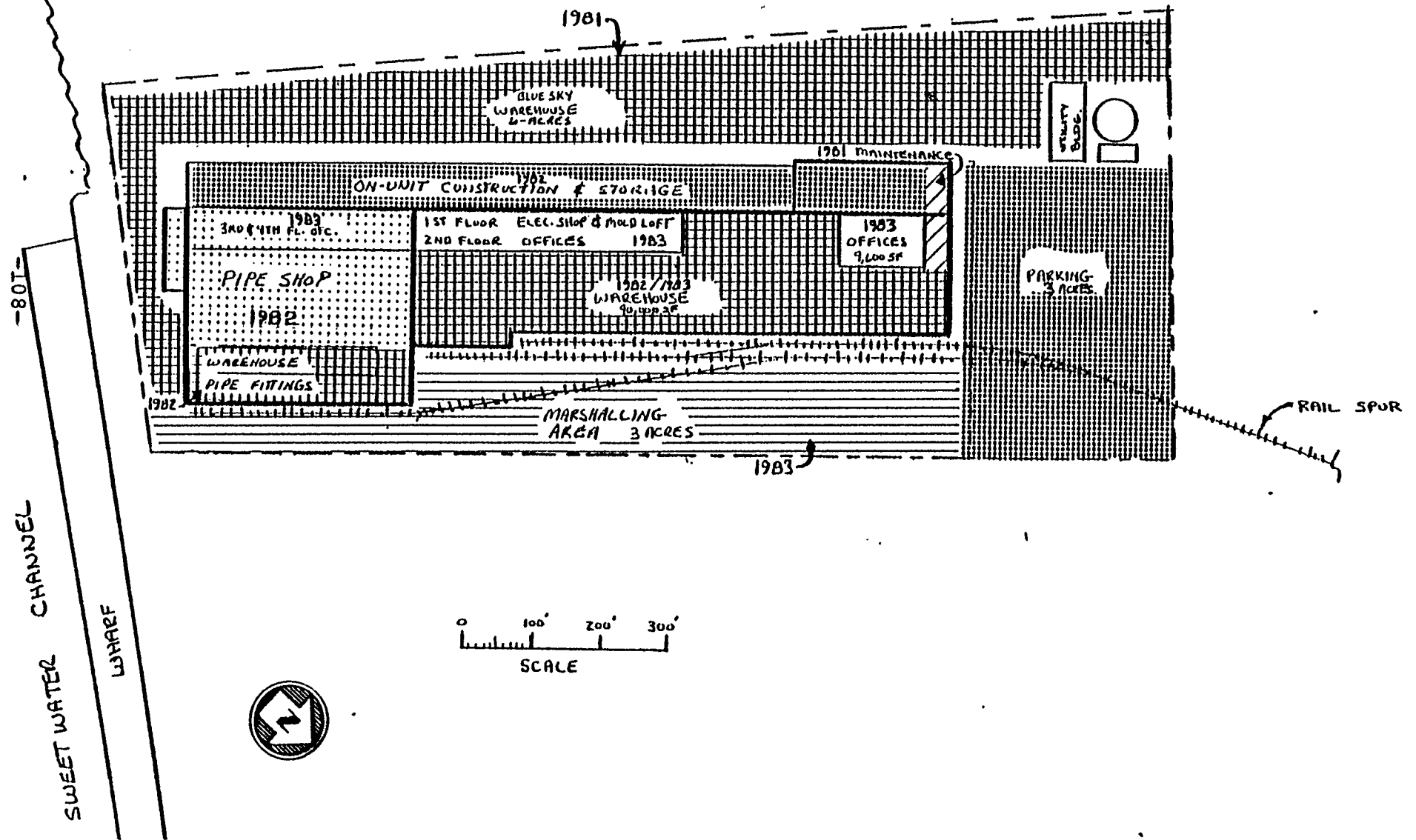
POTENTIAL 1990 MAIN YARD LAYOUT



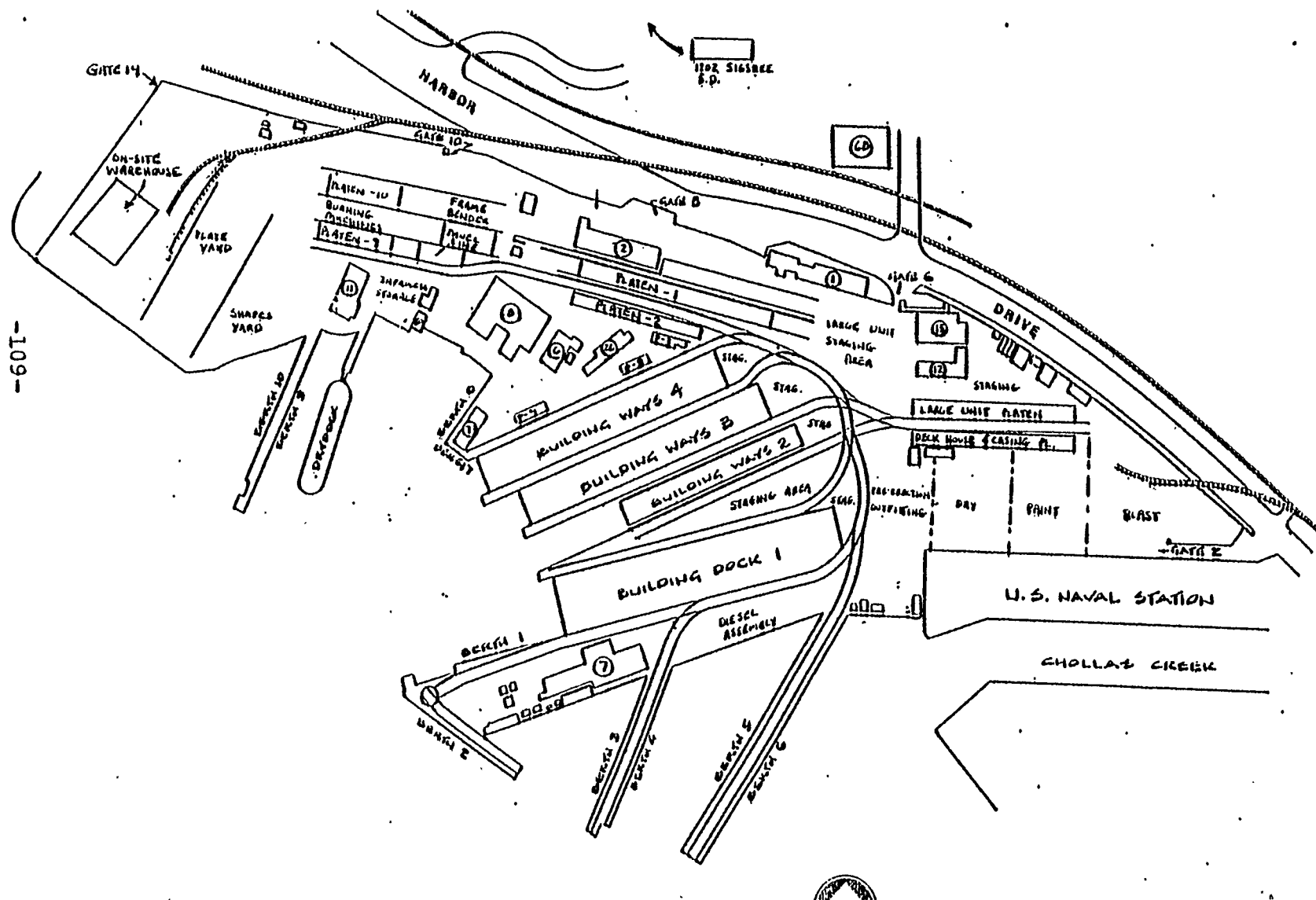
CHANGES TO PRESENT FACILITIES



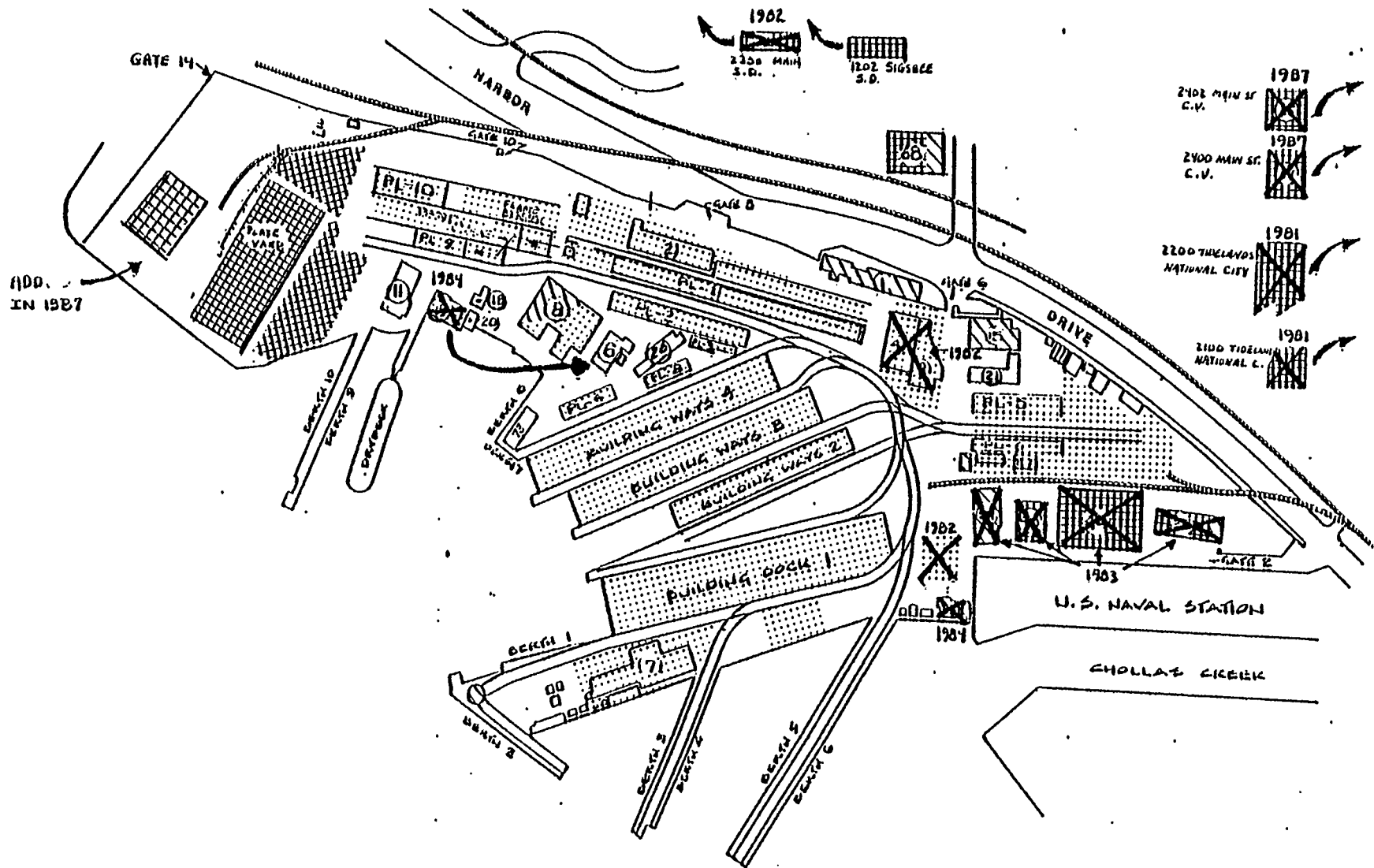
ITT BUILDING ON ITS OWN SITE



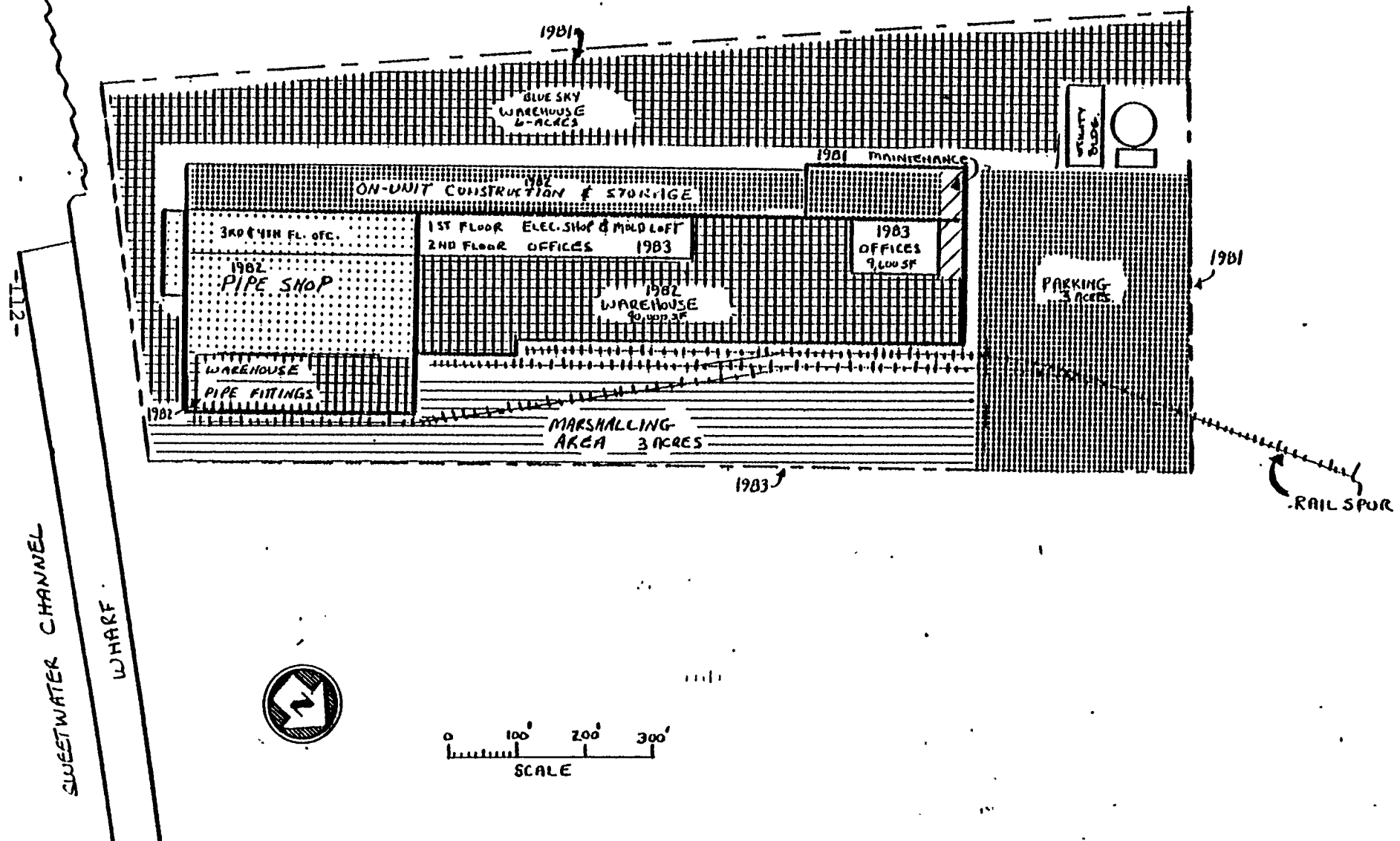
POTENTIAL 1987 MAIN YARD LAYOUT



CHANGES TO PRESENT FACILITIES

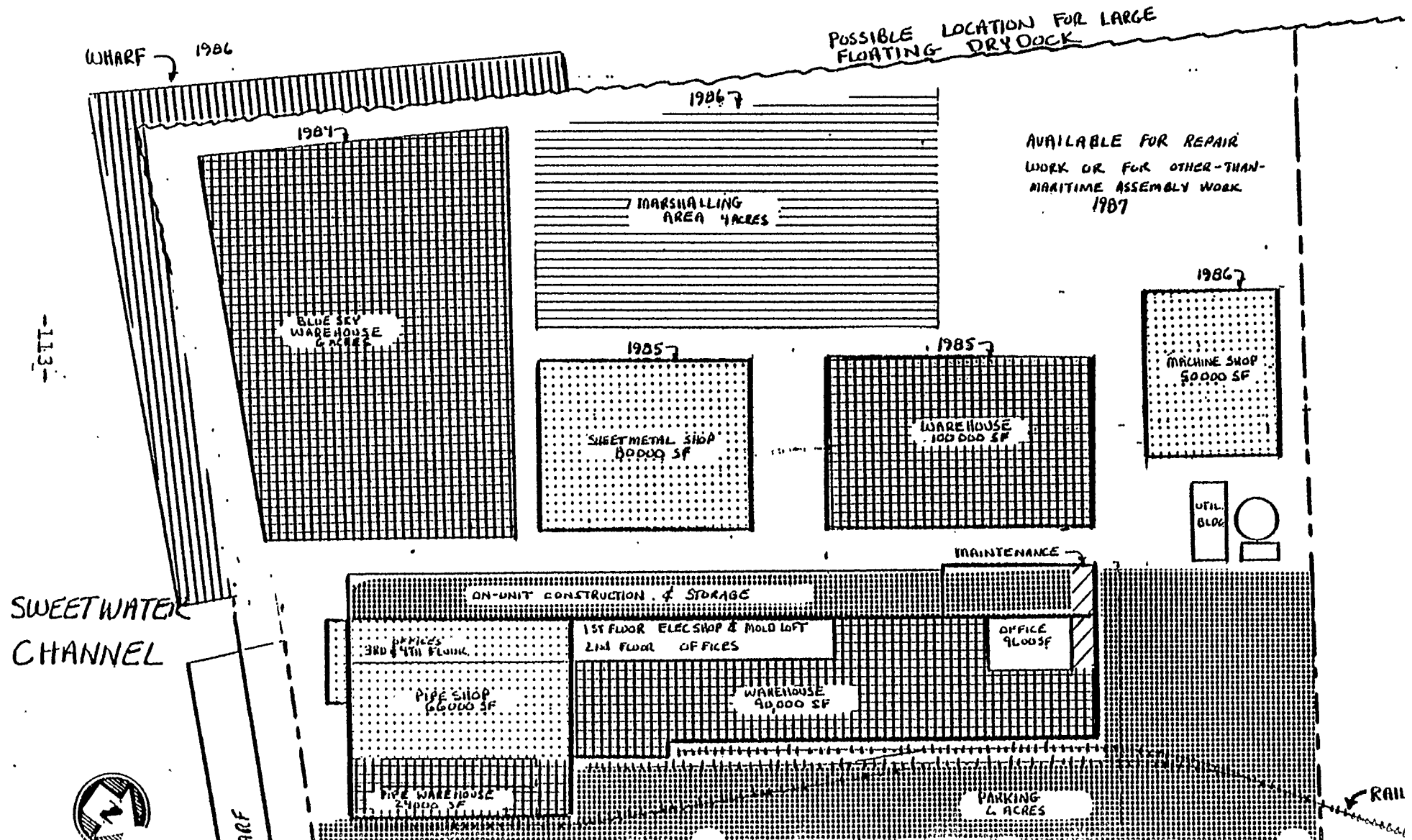
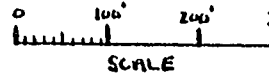


ITT BUILDING PLUS OPTION ON ADDITIONAL 20 ACRES

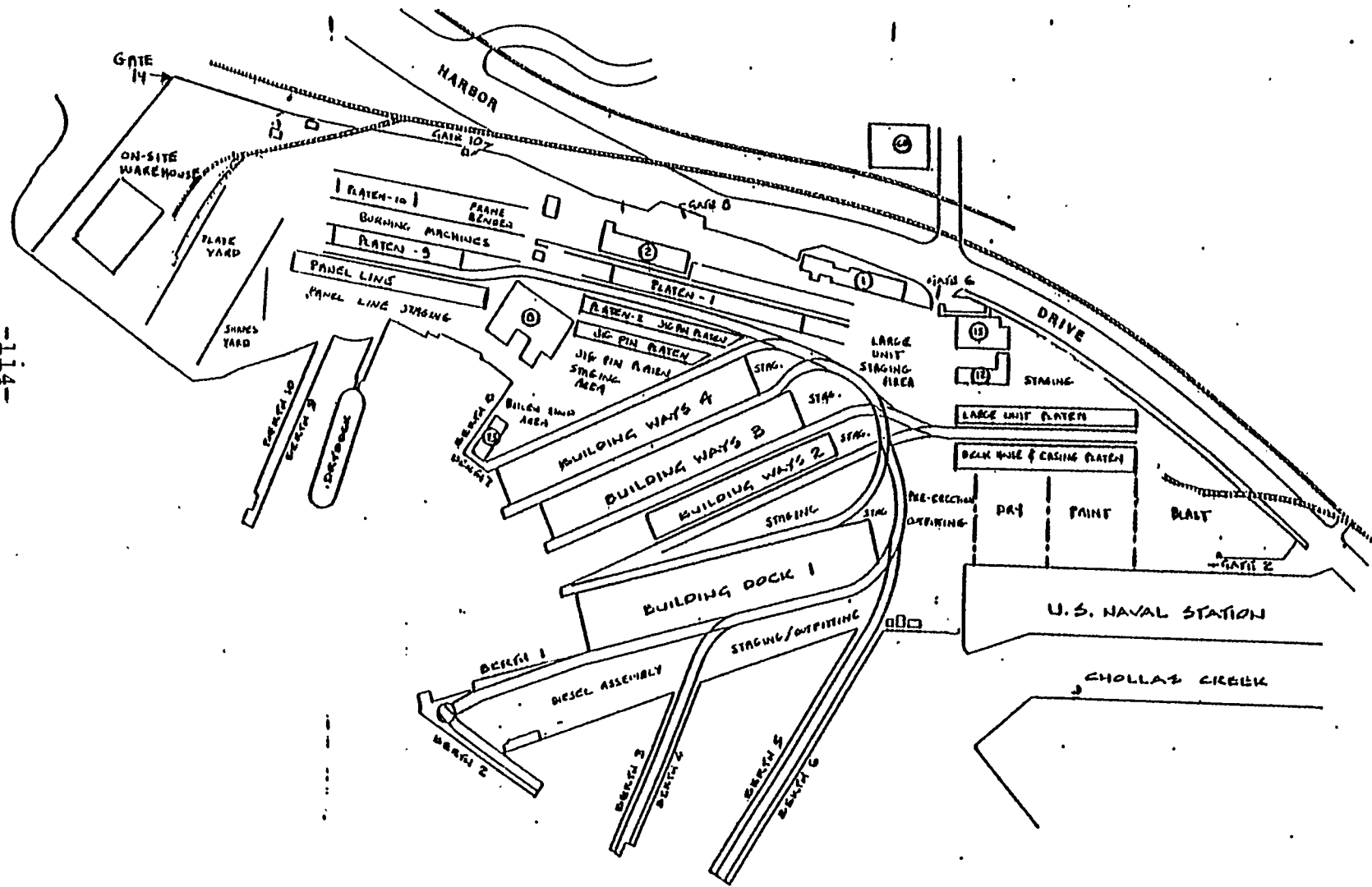


PHASE II 1984-1987
ITT PLUS ADJOINING 20 ACRES

SAN DIEGO BAY

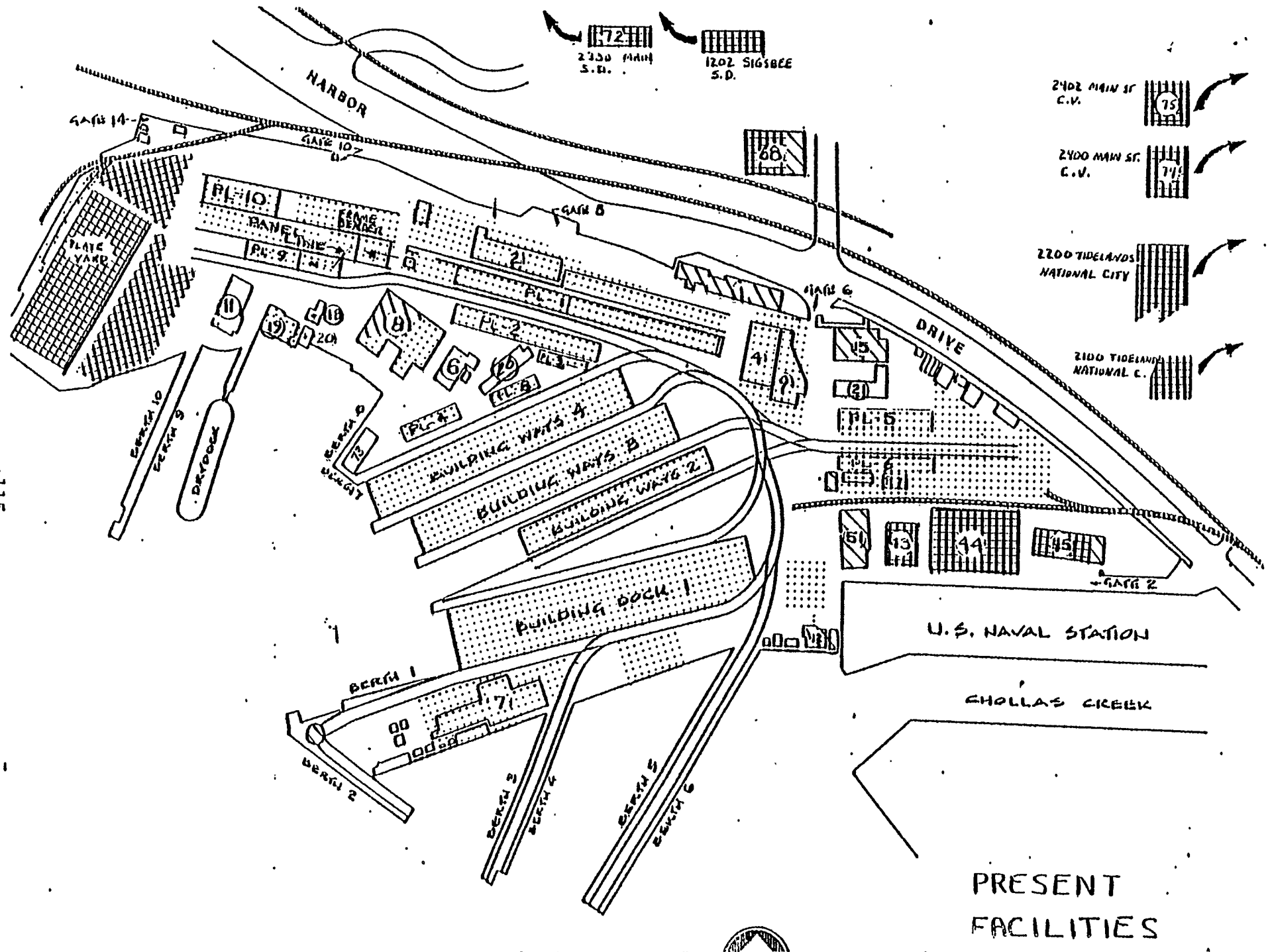


POTENTIAL 1987 MAIN YARD LAYOUT



- SAN DIEGO BAY -



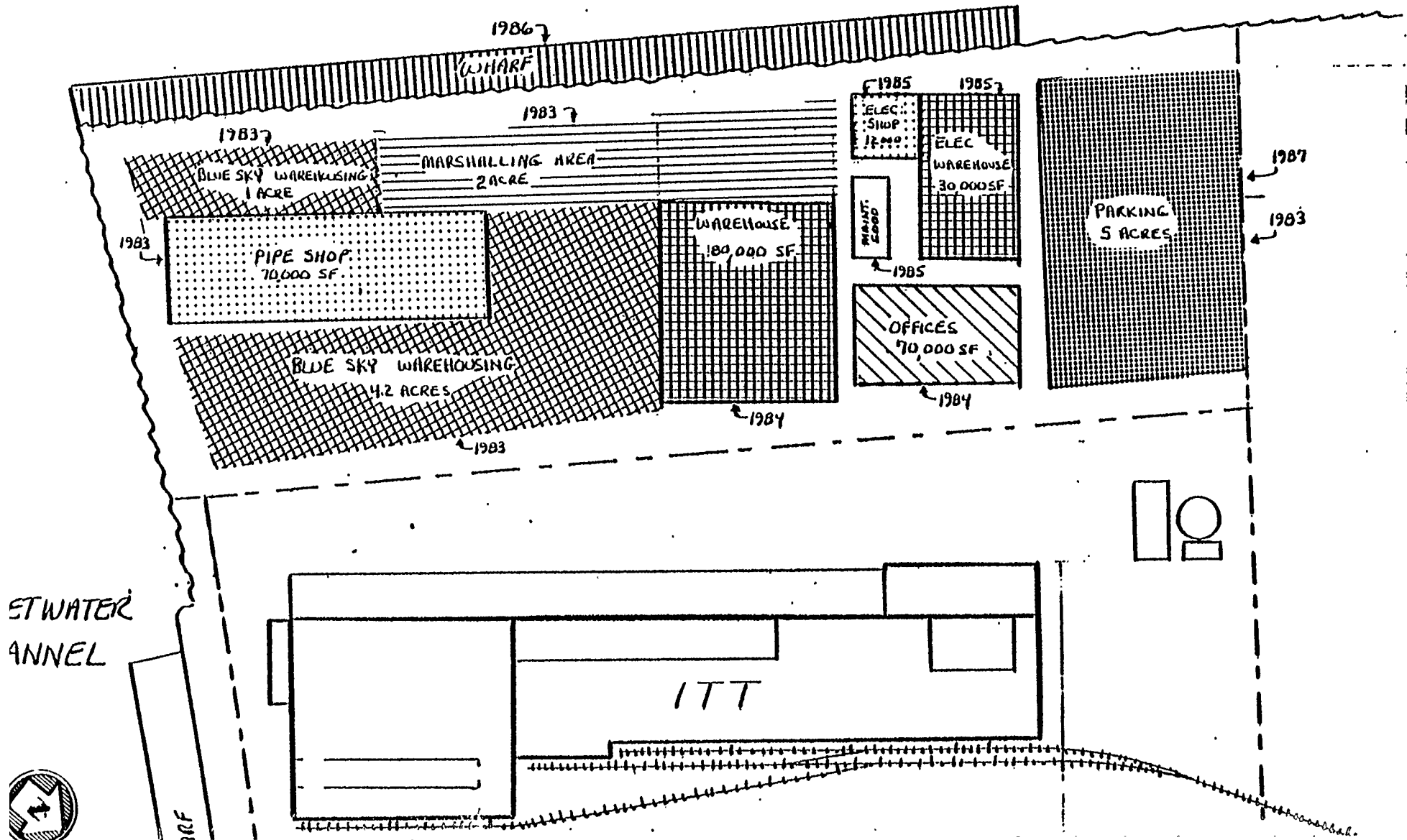
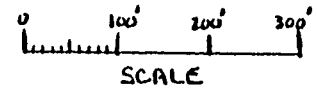


14

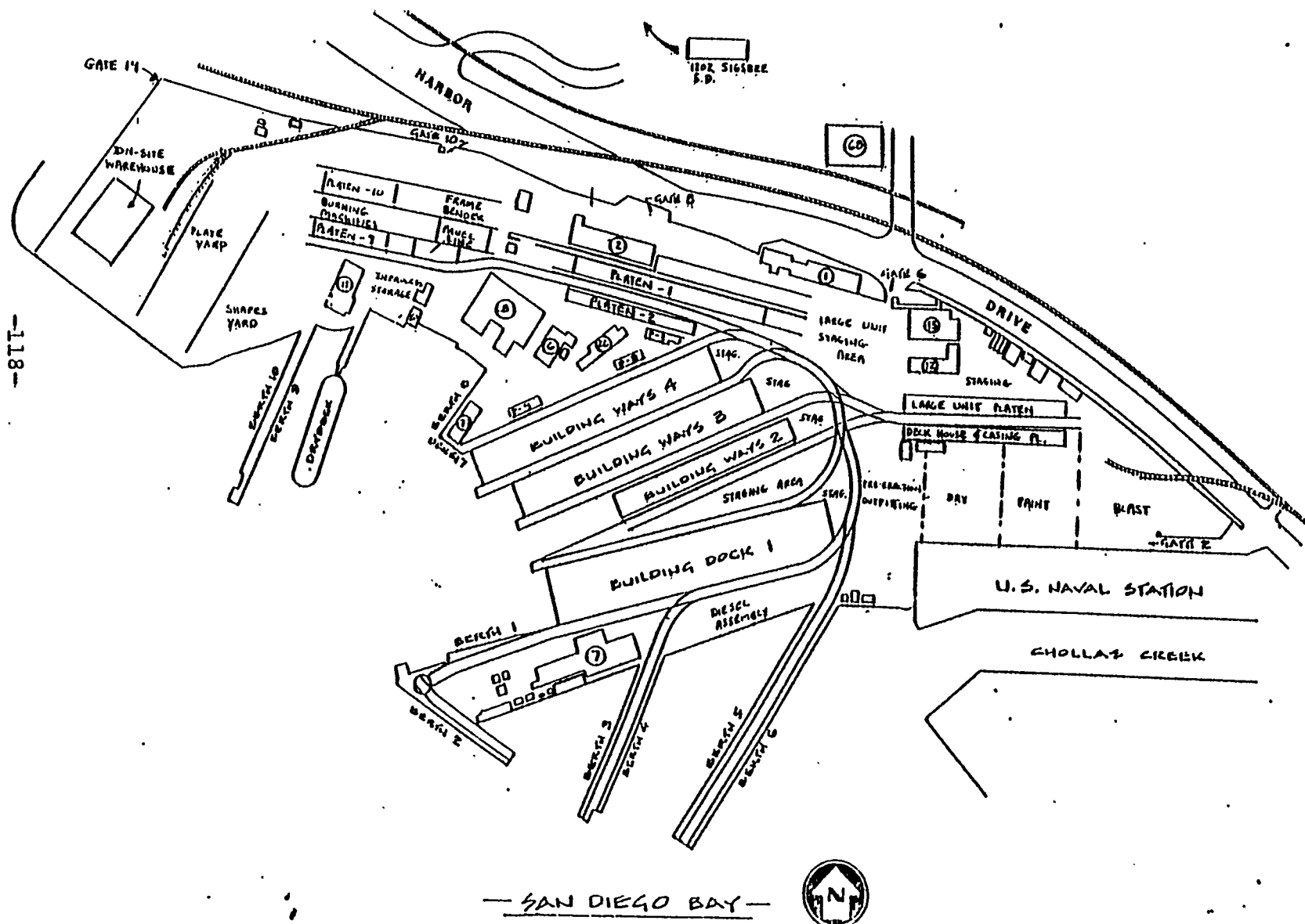


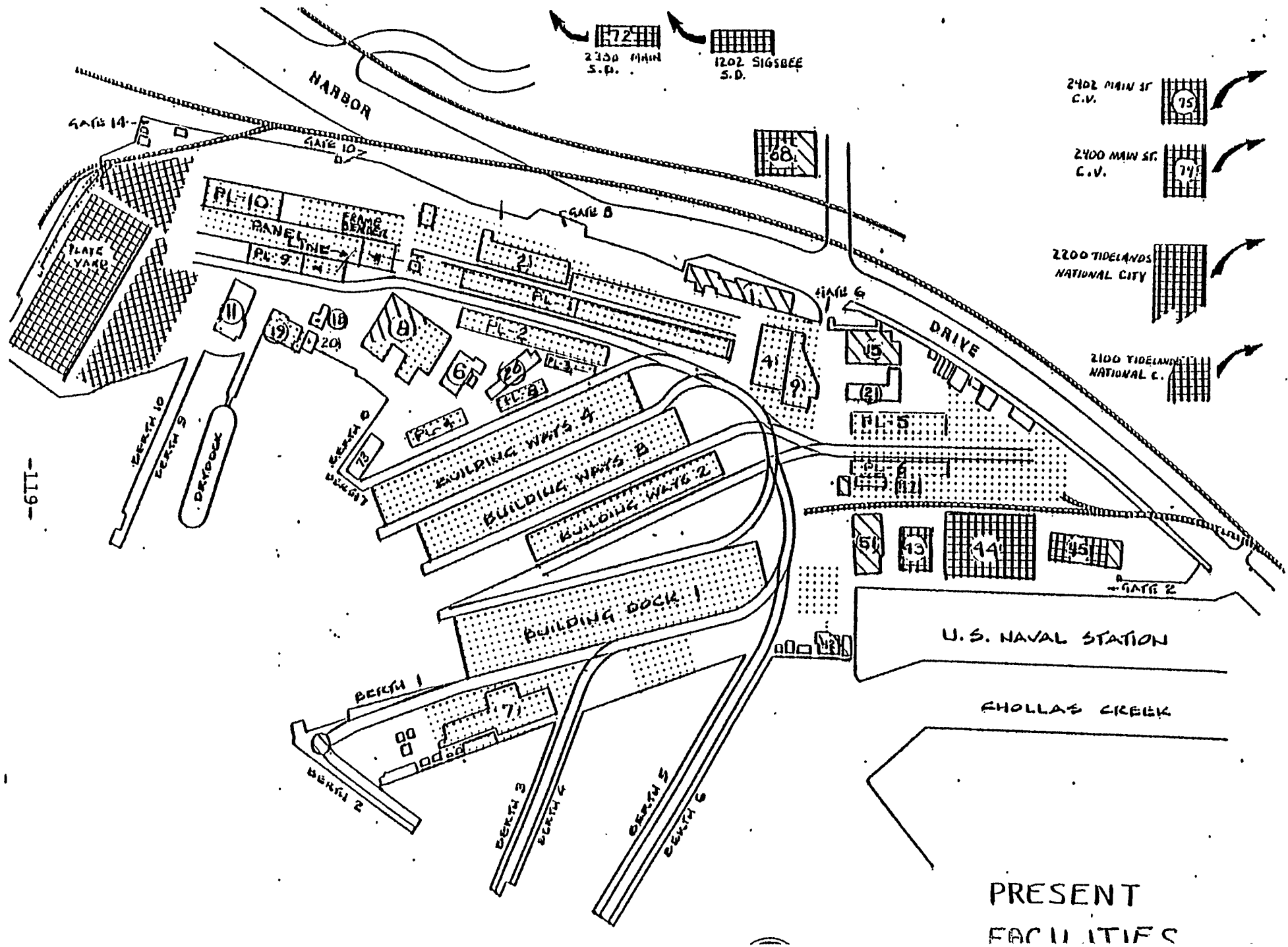
GREENFIELD ON WATER BEHIND ITT

SAN DIEGO BAY



POTENTIAL 1987 MAIN YARD LAYOUT





APPENDIX - J

EVALUATION OF OTHER THAN

'FINANCIAL' FACTORS

OTHER-THAN-FINANCIAL FACTORS EVALUATING ALTERNATIVES

Plant/Area NASSCO

Project Long Range Yard Expansion Date 2-3-81

Description of Alternatives: (enter a brief phrase identifying each alternative).....

1. Delta Property - West End of Yard.

2. Move Main Parking Lot Fence North to Railroad Tracks 3. Greenfield on Water - Chula Vista Sweetwater Site.

4. ITT Building on 18 Acres.

5. ITT & Adjoining 20 Acres.

6. Greenfield on Water Behind ITT.

Weight set by LPH & TSR.

Ratings by JRR & NLH

Tally by NLH

FACTOR/CONSIDERATION	WT.	RATINGS AND WEIGHTED RATINGS					
		1	2	3	4	5	6
1 Ability to meet long range goals of the company.	10	U 0	X -10	A 40	I 20	A 40	I 20
2 Ability to provide future growth or operating flexibility.	9	U 0	X -9	A 36	I- 13½	A 36	I 18
3 Ease of communication for production & material control	6	E 18	I 12	I 12	I 12	I 12	I 12
4 Effectiveness of materials handling & flow	10	U 0	X -10	E 30	I 20	E 30	I 20
5 Effectiveness of materials storage	6	0 6	0 6	E 18	I 12	E 18	E 18
6 Ease of providing additional office space.	4	U 0	U 0	I 8	E 12	E 12	I 8
7 Ability to provide adequate parking	4	I 8	X -4	I 8	E 12	E 12	I 8
8 Ease of introducing technological improvements	4	U 0	U 0	I 8	I 8	A 16	E 12
9 Ability to meet capacity requirements.	8	U 0	U 0	E 24	0 8	A 32	I- 12
10 Ease of supervision and control	7	I 14	I 14	E 21	I 14	E 21	I 12
11 Adaptability & versatility - the ease of accommodating changes in products, processes, procedures.	6	U 0	U 0	E 18	0 6	E 18	I 12
12 Likelihood of property availability.	7	0 7	E 21	U 0	A 28	A 28	A 28
13 Timeliness of effective availability - how soon can we use it effectively.	8	0 7	A 32	X -8	A- 28	A- 28	I 16
14 Potential for effective non-maritime use.	3	U 0	U 0	E 9	I 6	A 12	I 6
TOTALS		60	52	224	199½	315	204

NOTES

EVALUATING DESCRIPTION

A	Almost Perfect	4	0	Ordinary Results	1
E	Especially Good	3	U	Unimportant Results	0
I	Important Results	2	X	Not Acceptable	-

N A S S C O ' S
LONG RANGE FACILITY PLAN

BASE AND
DERIVED DATA
BOOK

BY: J, R, RUECKER
FACILITIES & INDUSTRIAL ENGINEERING DEPARTMENT

BASE AND DERIVED DATA

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FACILITIES RECAP MATRIX

<u>YEAR</u>	<u>EQUIVALENT SHIPS (3 YR. RL. AV.)</u>	<u>EQUIVALENT IMPACTED TONS (3 YR. RL. AV.)</u>	<u>NEW CONSTRUCTION DIRECT LABOR EMPLOYEES</u>
1968			
1969			
1970	3.2	17,400	
1971	3.5	15,900	
1972	2.5	14,100	
1973	2.1	23,200	
1974	2.9	39,700	3,300
1975	4.0	55,400	3,500
1976	5.3	66,900	4,300
1977	5.0	69,800	3,500
1978	4.3	69,100	3,500
1979	5.4	64,300	4,300
1980	6.4	78,000 (1),	4,400 (1),
<hr/>			
<u>PROJECTIONS BASED ON HISTORICAL DATA</u>			
1981	6.0	83,000	4,200
1982	6.2	88,000	4,300
1983	6.4	92,000	4,500
1984	6.6	95,000	4,600
1985	6.8	99,000	4,800
1986	7.0	104,000	4,900
1987	7.2	107,000	5,000
1988	7.4	110,000	5,200
1989	7.6	113,000	5,300
1990	7.8	116,000	5,500
1995	8.8	124,000	6,200.
2000	9.7	128,000	6,800

(1) ?projection

FACILITIES RECAP MATRIX-CONTINUEDTOTAL EMPLOYMENT

<u>YEAR</u>	<u>PRODUCTION EMPLOYEES</u>	<u>NON-PRODUCTION EMPLOYEES</u>	<u>TOTAL EMPLOYEES</u>
1968	2,300	600	2,900
1969	3,000	700	3,700
1970	3,400	700	4,100
1971	2,400	600	3,000
1972	1,600	700	2,300
1973	2,500	900	3,400
1974	3,700	900	4,600
1975	4,400	1,100	5,500
1976	5,300	1,200	6,500
1977	5,000	1,200	6,200
1978	4,700	1,300	6,000
1979	5,100	1,300	6,400
1980	5,200	1,600-	6,800
<u>PROJECTIONS BASED ON HISTORICAL DATA</u>			
1981	5,700	1,500	7,200
1982	5,800	1,600	7,400
1983	6,000	1,600	7,600
1984	6,200	1,700	7,900
1985	6,300	1,700	8,000
1986	6,500	1,800	8,300
1987	6,600	1,800	8,400
1988	6,800	1,900	8,700
1989	6,900	1,900	8,800
1990	7,000	2,000	9,000
1995	7,700	2,200	9,900
2000	3,400	2,400	10,800

FACILITIES RECAP MATRIX-CONTINUED

<u>YEAR</u>	<u>NASSCO CONTROLLED ACREAGE (MINUS WATER)</u>	<u>Production ACREAGE</u>	<u>STORAGE ACREAGE</u>	<u>PARKING ACREAGE</u>
1968	77			7
1969	78			8
1970	78			8
1971	78			8
1972	78			8.
1973	80			8
1974	95	24	33	9
1975	97	24	36	12
1976	98	26	42	12
1977	9 8	2 6	42	12
1978	100	26	44	12
1979	100	26	44	1.2
1980	101	28	43	12
<u>PROJECTIONS BASED ON HISTORICAL DATA</u>				
1981	121	29	47	20
1982	124	30	49	21
1983	126	31	51	22
1984	128	32	53	22
1985	131	33	54	23
1986	135	34	56	23
1987	137	34	58	24
1988	140	35	59	24
1989	143	36	60	25
1990	145	37	62	26
1995	156	40	67	28
2000	162	42	71	31

FACILITIES RECAP MATRIX-CONTINUED

<u>YEAR</u>	<u>PLATEN SQUARE FOOTAGE</u>	<u>OFFICE SQUARE FOOTAGE</u>	<u>OUTFITTING BEF REQUIREMENT</u>
1968			2
1969			6
1970	99,000		6
1971	99,000	-	6
1972	99,000		5
1973	126,000		2
1974	126,000	120,000	3
1975	138,000	145,000	4
1976	138,000	147,000	5
1977	138,000	164,000	4
-197'8	138, 000	167000	2
1979"	138,000	186,000	3
1980	172,000	210,000	3

PROJECTIONS BASED ON HISTORICAL DATA

1981	183,000	216,000	5
1982	185,000	227,000	5
1983	193,000	237,000	5
1984	190,000	249,000	5
1985	189,000	261,000	6
1986	198,000	275,000	6
1987	193,000	286,000	6
1988	198,000	296,000	6
1989	203,000	309,000	6
1990	210,000	322,000	6
1995	211,000	373,000	7
2000	218,000	421,000	7

DATA PROJECTION

DEVELOPMENT

PRODUCTION EMPLOYEE REQUIREMENT PROJECTION

	(a) EQUIV. SHIPS . PROJECTION (3 YR. RL. AV.)	(b) N/C D/L EMPLOYEES PER EQUIV. SHIP	(c) N/C D/L EMPLOYEE PROJECTION (a x b)	(d) OTEER THAN N/C D/L EMPLOYEE ADDER	P
1981	6.0	700	4,200	1,500	
1982	6.2	700	4,300	1,500	
1983	6.4	700	4,500	1,500	
1984	6.6	700	4,600	1, 600	
1985	6.8	700	4,800	1,500	
1986	7.0	700	4,900	1,600	
1987	7.2	700	5,000	1,600	
1988	7.4	700	5,200	1,600	
1989	7.6	700	5,300	1,600	
1990	7.8	700	5,500	1,500	
1995	8.8	700	6,200	1,500	
2000	9.7	700	6,800	1,600	

November 1980

NON-PRODUCTION EMPLOYEE REQUIREMENT PROJECTION

	(a) EQUIV. SHIPS PROJECTION (3 YR. RL. AV.)	(b) NON-PROD ' N EMPLOYEES/PER EQUIV. SHIP	(c) NON-PROD' N EMPLOYEE PROJECTION (a x b)
1981	6.0	250	1,500
1982	6.2	250	1,600
1983	6.4	250	1,600
1984	6.6	250	1,700
1985	6.8	250	1,700
1986	7.0	250	1,800
1987	7.2	250	1,800
1988	7.4	250	1,900
1989	7.6	250	1,900
1990	7.8	250	2,000
1995	8.8	250	2,200
2000	9.7	250	2,400

September 10, 1980

YARD ACREAGE REQUIREMENT PROJECTIONS

	(a) EQUIV. SHIPS PROJECTIONS (3 yr. rl.av.)	(b) ACRES PER EQUIV. SHIP (3 yr. rl.av.)	(c) YARD (a x b) ACREAGE
1980			
81	6.0	19.75	119.0
82	6.2	19.60	122.0
83	6.4	19.55	125.0
84	6.6	19.50	129.0
85	6.8	19.45	132.0
86	7.0	19.40	136.0
87	7.2	19.35	139.0
88	7.4	19.25	142.0
89	7.6	19.10	145.0
90	7.8	19.00	148.0
95	8.8	18.75	165.0
2000	9.7	18.25	177.0

(1) Acreage excluding water.

September 10, 1980

YARD ACREAGE REQUIREMENT PROJECTIONS-continued

	(d) IMPACTED TONS (3 yr. RL. AV.) 000	(e) IMPACTED TONS (3 YR. RL. AV.) PER ACRE	(f) YARD ACREAGE (d ÷ e)	(g) AVERAGE of (c) and
1980	78	650		
81	83	675	123.0	121.0
82	88	700	126.0	124.0
83	92	725	127.0	126.0
84	95	750	127.0	128.0
85	99	765	130.0	131.0
86	104	780	133.0	135.0
87	107	795	135.0	137.0
88	110	800	138.0	140.0
89	113	810	140.0	143.0
90	116	820	142.0	145.0
95	124	850	146.0	156.0
2000	128	875	146.0	162.0

9/ 11/8 0

PRODUCTION AREA REQUIREMENT PROJECTIONS IN ACRES

	(a) EQUIV. SHIPS PROJECTIONS (3 YR. RL. AV.)	(b) PRODUCTION AREA (ACRES) PER EQUIV. SHIP (3 YR. RL. AV.)	(c) PRODUCTION AREA PROJECTION (a x b)
1980			
81	6.0	4.5	27.0
82	6.2	4.5	28.0
83	6.4	4.5	29.0
84	6.6	4.5	30.0
85	6.8	4.5	31.0
86	7.0	4.5	32.0
87	7.2	4.5	32.0
88	7.4	4.5	33.0
89	7.6	4.5	34.0
90	7.8	4.5	35.0
95	8.8	4.5	40.0
2000	9.7	4.5	44.0

9/11/80

PRODUCTION AREA REQUIREMENT PROJECTIONS IN ACRES-continued

	(d) IMPACTED TONS (3 YR. RL. AV.) '000	(e) IMPACTED TONS (3 YR. RL. AV.) PER PROD. AREA	(f) PRODUCTION AREA PROJECTION (d - e)	(g) AVERAGE OF (c) and (f)
1980	78	2,750		
81	83	2,780	30.0	29.0
82	88	2,800	31.0	30.0
83	92	2,825	33.0	31.0
84	95	2,860	33.0	32.0
85	99	2,890	34.0	33.0
86	104	2,910	36.0	34.0
87	107	2,950	36.0	34.0
88	110	2,990	37.0	35.0
89	113	3,000	38.0	36.0
90	116	3,010	39.0	37.0
95	124	3,125	40.0	40.0
2000	128	3,190	40.0	42.0

9/11/80

STORAGE SPACE REQUIREMENT PROJECTIONS IN ACRES

	(a) EQUIV. SHIPS PROJECTIONS (3 YR. RL. AV.)	(b) STORAGE AREA (ACRES) PER EQUIV. SHIP (3 YR. RL. AV.)	(c) STORAGE AREA PROJECTION (ax b)
1980			
81	6.0	7.2	43.0
82	6.2	7.2	45.0
83	6.4	7.2	46.0
84	6.6	7.2	48.0.
85	6.8	7.2	49.0
86	7.0	7.2	50.0
87	7.2	7.2	52.13
88	7.4	7.2	53.0
89	7.6	7.2	55.0
90	7.8	7.2	56.0
95	8.8	7.2	63.0
2000	9.7	7.2	70.0

9/11/80

STORAGE SPACE REQUIREMENT PROJECTIONS IN ACRES-continued

	(d) IMPACTED TONS (3 YR. RL. AV.) '000	(e) IMPACTED TONS (3 YR. RL. AV.) PER STOR. AREA	(f) STORAGE AREA PROJECTIONS (d - e)	(g) AVERAGE OF (c) and (f)
1980	78	1,625		
81	83	1,640	51.0	47.0
82	88	1,650	53.0	49.0
83	92	1,665	55.0	51.0
84	95	1,675	57.0	53.0
85	99	1,690	59.0	54.0
86	104	1,700	61.0	56.0
87	107	1,710	63.0	58.0
88	110	1,720	64.0	59.0
89	113	1,730	65.0	60.0
90	116	1 , 7 4 0	67.0	62.0
95	124	1,770	70.0	67.0
2000	128	1,780	72.0	71.0

September 10, 1980

PARKING SPACE REQUIREMENT PROJECTIONS IN ACRES

	TOTAL EMPLOYMENT	PARKING ACREAGE (1)
1980		
81	7,200	20.0
82	7,409	21.0
83	7,616	22.0
84	7,821	22.0
85	8,024	23.0
86	8,225	23.0
87	8,424	24.0
88	8,621	24.0
89	8,816	25.0
90	9,009	26.0
95	9,944	28.0
2000	10,816	31.0

(a) Parking acreage determined by parking requirement formula

$$\frac{\text{Total Employment} \times .76}{1.6} \times 260 \div 43,560 = \text{Acres of Parking}$$

September 10, 1980

PLATEN SPACE REQUIREMENT PROJECTIONS IN SQ. FT.

	EQUIV. IMPACTED TONS; (3YR. RLG .	SQ. FT. PL. SPACE PER EQ. IMPACT TON 3 YR. RL. AV.	PLATEN SPACE 1-9, SQ. FT. '000
70	17.4		99.2
71	15.9	5.7	99.2
72	14.1	7.0	99.2
73	23.2	5.4	126.1
74	59.7	3.2	126.1
75	55.4	2.5	138.4
76	66.9	2.1	138.4
77	69.8		158.4
78.	69.1	2.0	1 3 8 . 4
79	64.3	2.2	138.4
80.	78.0	2.2(1)	171.6
81	83.0	2.2	182.6
82	88.0		184.8
83	92.0	2.1	193.2
84	95.0	2.0	190.0
85	99.6	1.9	189.2
86	104.0		197.6
87	107.0	1.9	192.6
88	110.0	1.8	198.0
89	113.0		203.4
90	116.6	1.8	209.9
95	124.0	1.7	210.8
2000	128.0	1.7	217.6

(1) Sq. ft. platen space per equivalent impacted tons projected on data from 1970-80.

OFFICE SPACE REQUIREMENT PROJECTIONS IN SC). FT.

	(a) OFFICE SQ. FT./ EQUIV.SHIP RATIO PROJECTION (COL. 24)	(b) (a) x NO. OF EQUIV. SHIPS SQ. FT.	(c) SQ. FT./ NON PROD EMPLOYEE RATIO (Cole 25)	(d) (c) x PROJECTIONS OF NON-PROD'N EMPLOYEES	0
1980	—	—		—	
81	35,500	213,000	146	219,000	
82	36,000	223,000	149	231,000	
83	36,250	232,000	151	242,000	
84	36,500	241,000	155	256,000	
85	37,000	252,000	159	270,000	
86	37,750	265,000	163	285,000	
87	38,000	274,000	165	297,000	
88	38,250	283,000	167	309,000	
89	39,000	297,000	169	321,000	
90	39,500	308,000	172	335,000	
95	40,000	352,000	179	394,000	
2000	41,000	398,000	183	444,000	

September 10, 1980

OUTFITTING BERTH REQUIREMENTS

	<u>EQUIV. SHIPS PROJECTIONS (3 yr. roll av.)</u>	<u>BERTH TO EQUIV. SHIP RATIO</u>	<u>OUTFITTING BERTHS PROJECTION</u>	<u>ACTUAL REQUIREMENT (2)</u>
1980				3.0
81	6.0	.75	4.5	4.0
82	6.2	.75	4.7 (1)	5.0
83	6.4	.75	4.8	
84	6.6	.75	5.0	
85	6.8	.75	5.1	
86	7.0	.75	5.3	
87	7.2	.75	5.4	
88	7.4	.75	5.6	
89	7.6	.75	5.7	
90	7.8	.70	5.5	
95	8.8	.70	6.2	
2000	9.7	.70	6.8	

(1) Berth II will require major rebuild and will be out of action for an extended period.

(2) Based on actual launching schedule.

9/11/80

ELECTRICAL USAGE REQUIREMENTS PROJECTIONS IN KWH

	(a) EQUIV. SHIPS PROJECTIONS (3 YR. RL. AV.)	(b) KWH PER EQUIV. SHIP (3 YR. RL. AV) '000,000	(c) KWH PROJECTION (a x b) '000,000	(d) IMPACTED TONS (3 YR. RL. AV.) '000,000	(e) KWH PER IMP. TON (3 YR. RL. AV)	(f) KWH PROJECTION (d x e) '000,000	(g) AVERAGE of (c) and (f) '000,000
1980	-	7.2	-	78	595	46	-
81	6.0	7.0	42.0	83	580	48	45
82	6.2	6.8	42.0	88	575	51	47
83	6.4	6.6	42.0	92	565	52	47
84	6.6	6.5	43.0	95	560	53	48
85	6.8	6.4	44.0	99	555	55	50
86	7.0	6.3	44.0	104	550	57	51
87	7.2	6.2	45.0	107	545	58	52
88	7.4	6.1	45.0	110	540	59	52
89	7.6	6.0	46.0	113	535	60	53
90	7.8	5.9	46.0	116	525	61	54
95	8.8	5.7	50.0	124	500	62	56
2000	9.7	5.5	53.0	128	490	63	53

RATIO'S

DATA RECORD

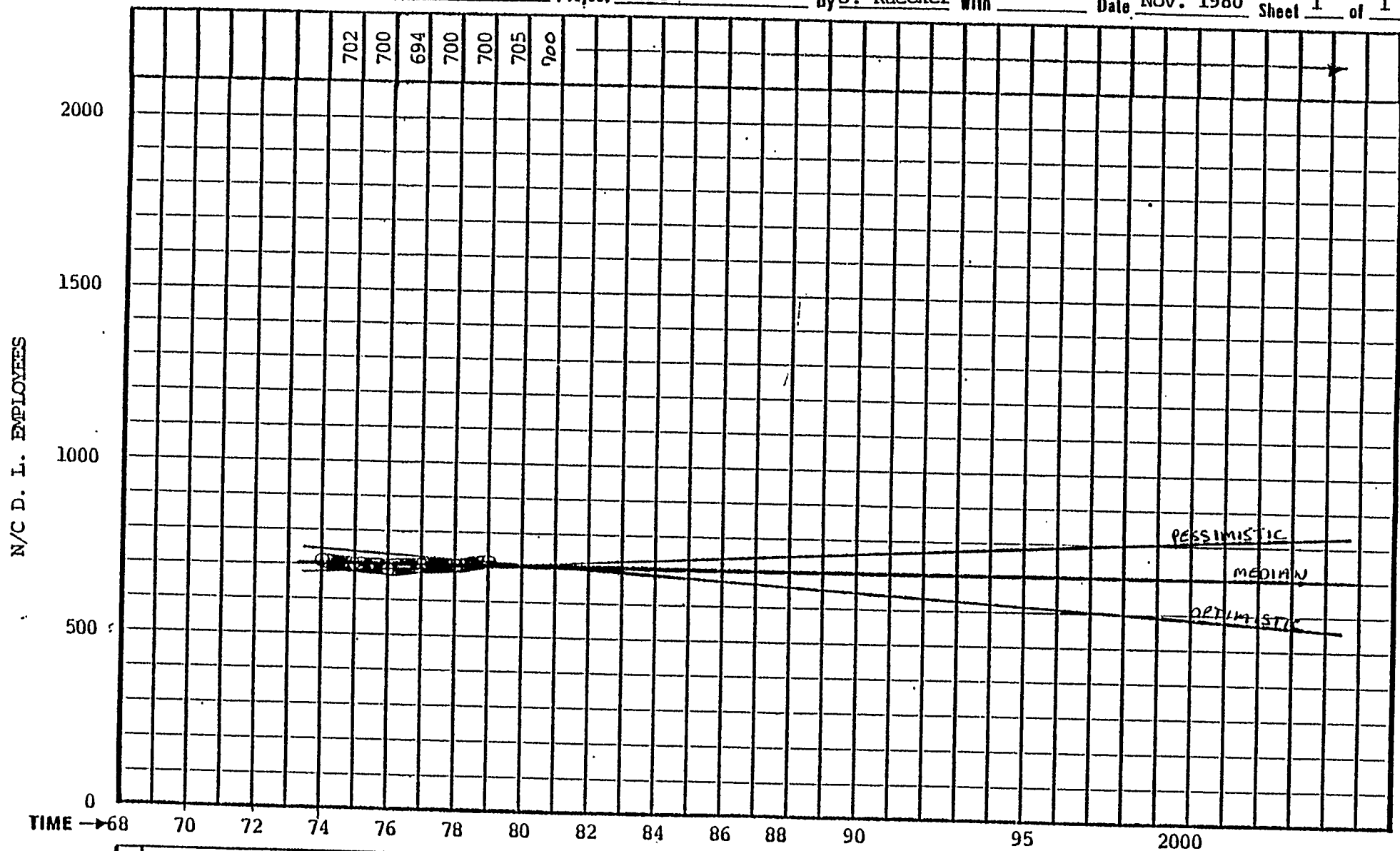
Plant NASSCO

Project LRFP

By J. Ruecker With _____

Date Nov. 1980

Sheet 1 of 1



TIME → 68 70 72 74 76 78 80 82 84 86 88 90 95 2000

Notation References	a		e		TITLE: New construction d. l. employees per equiv. ship-ratio. SOURCE: Base and derived data trends
	b		f		
	c		g		
	d		h		

DATA RECORD

Plant NASSCO

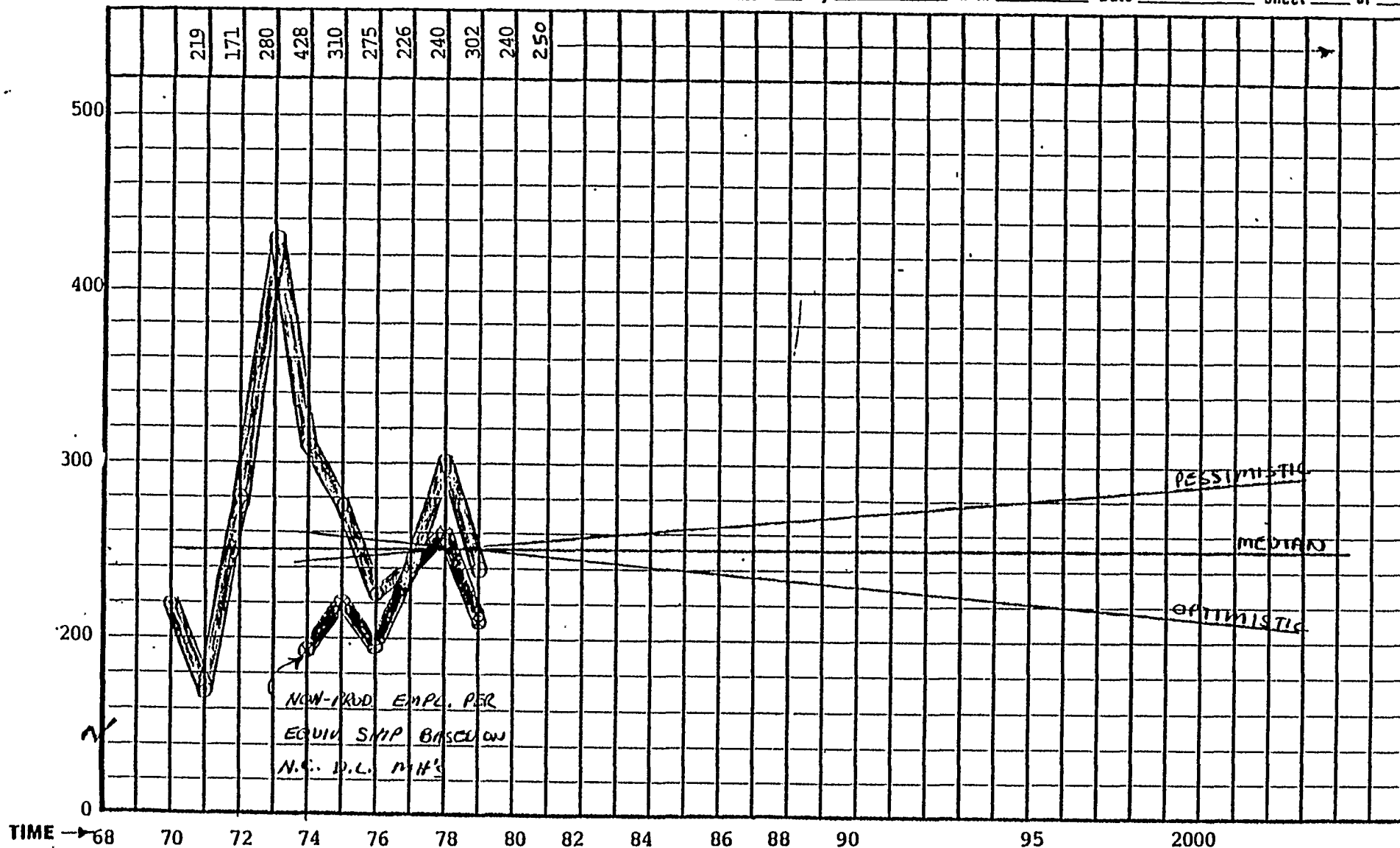
Project LRFP

By J. Ruecker With _____

Date Nov. 1980

Sheet 1 of 1

NON-PRODUCTION EMPLOYEES



TIME → 68 70 72 74 76 78 80 82 84 86 88 90 95 2000

Notation
References

a		e		TITLE: Non-production employee per equiv.
b		f		ship (3 yr. rl. av.)-ratio.
c		g		SOURCE: Base and derived data trends
d		h		col: (7)

RMA-350

RICHARD MUTHEN & ASSOCIATES

KANSAS CITY, MO.

(MAY BE REPRODUCED FOR IN-COMPANY USE PROVIDED ORIGINAL SOURCE IS NOT DELETED.)

DATA RECORD

Plant NASSCO

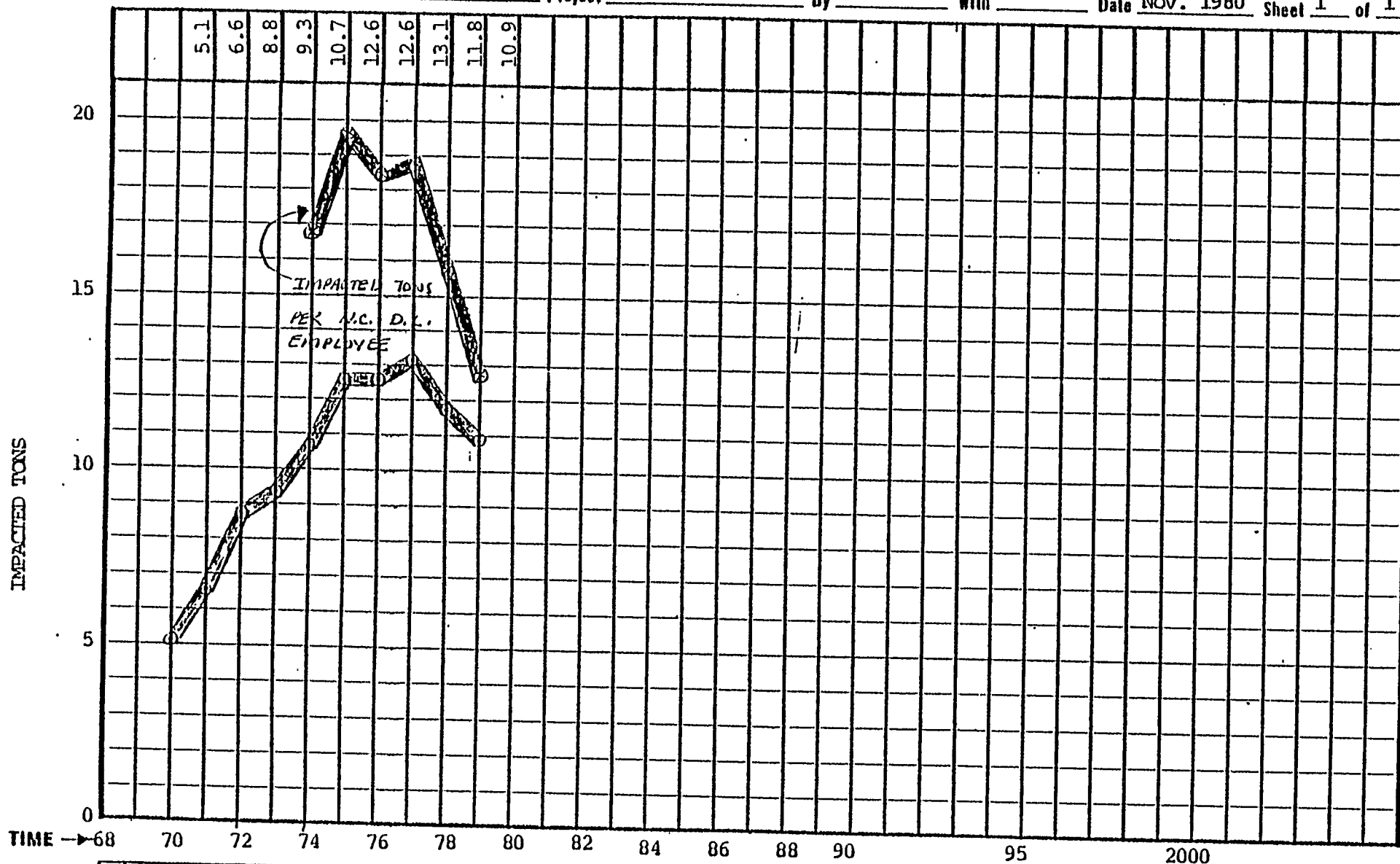
Project LRFP

By J. Ruecker

With _____

Date Nov. 1980

Sheet 1 of 1

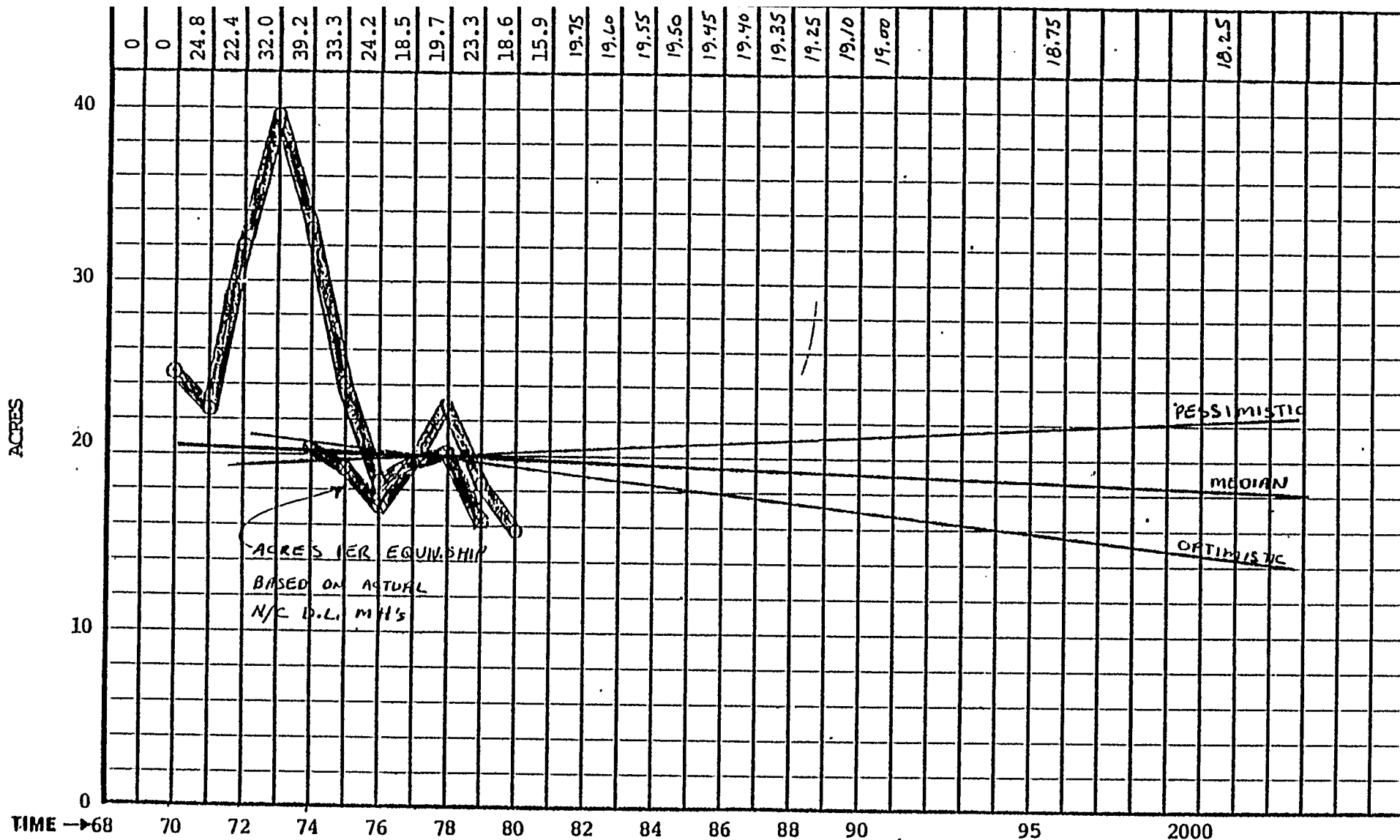


Notation
References

a	
b	
c	
d	

e	
f	
g	
h	

TITLE: Impacted tons (3 yr. rl. av.) per
prod. empl.-ratio.
SOURCE: Base and derived data trends



Notation
References

a		e		TITLE: Acres per equiv. ship (3 yr. rl.
b		f		av.)-ratio.
c		g		SOURCE: Base and derived data trends
d		h		col: (15)

DATA RECORD

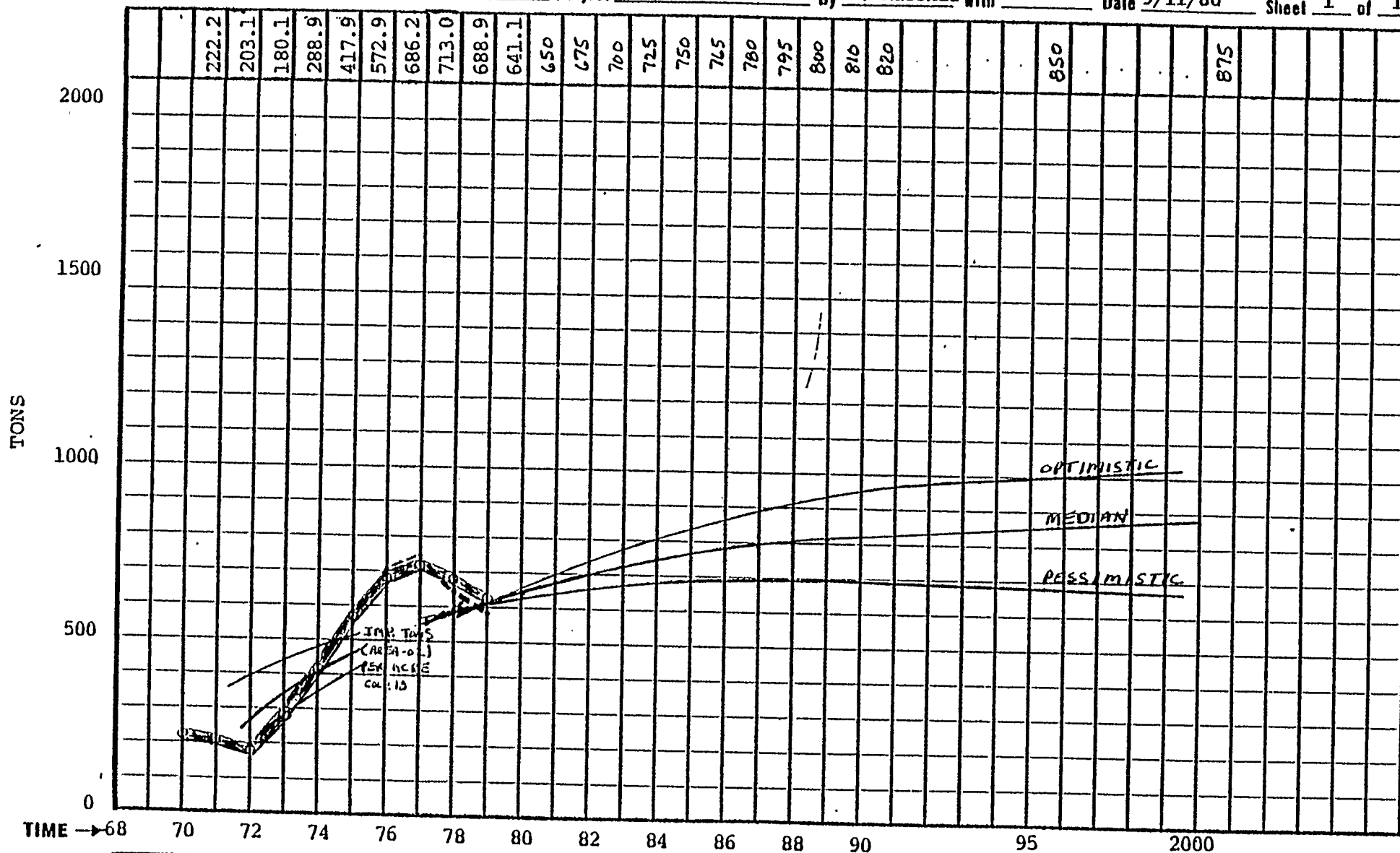
Plant NASSCO

Project LRFP

By J. Ruecker With

Date 9/11/80

Sheet 1 of 1



Notation
References

a	
b	
c	
d	

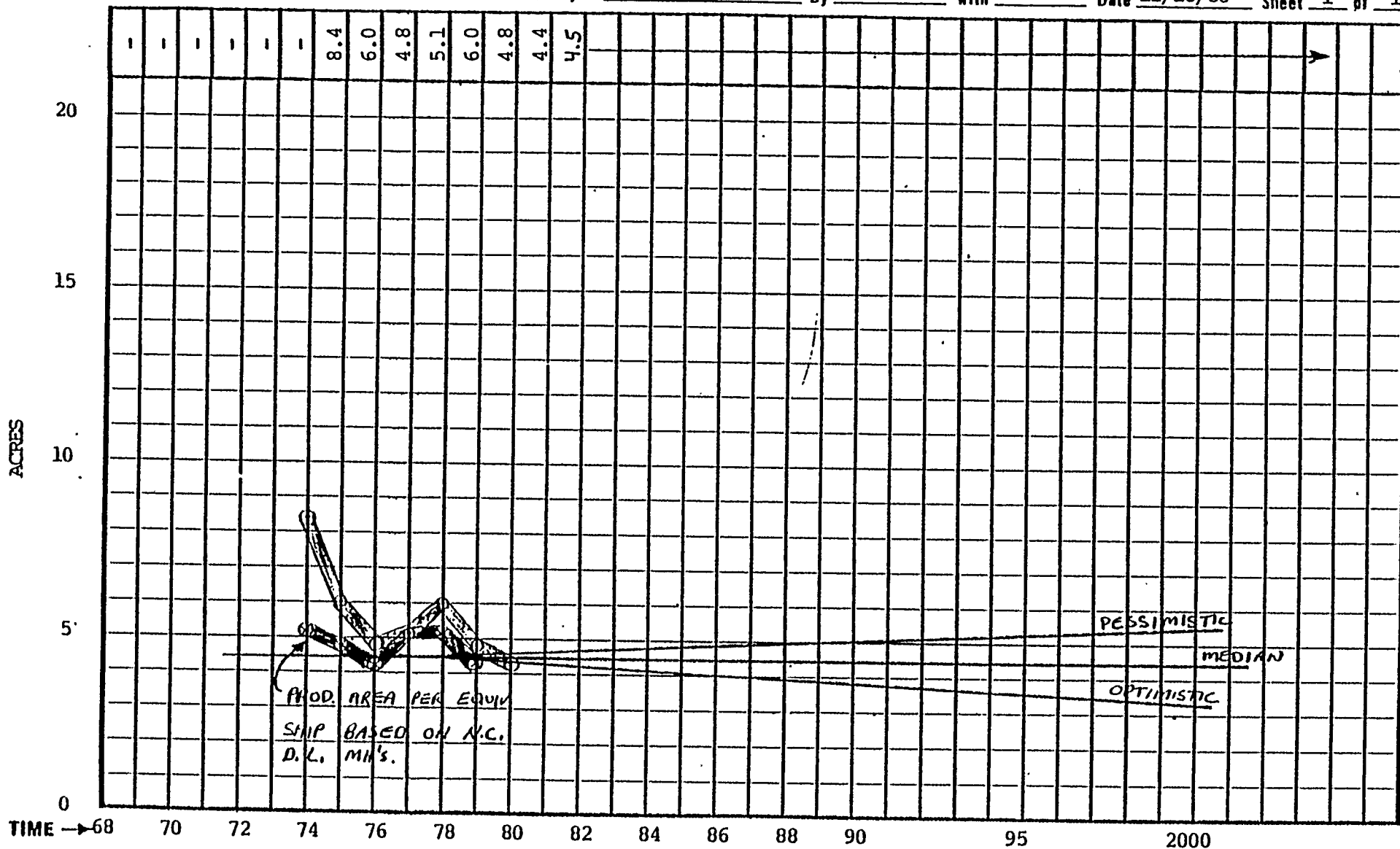
e	
f	
g	
h	

TITLE: Impacted Tons (3 Yr. Rl. Av.)

per total acreage - ratio

SOURCE: Base and derived data trends

col: (17)

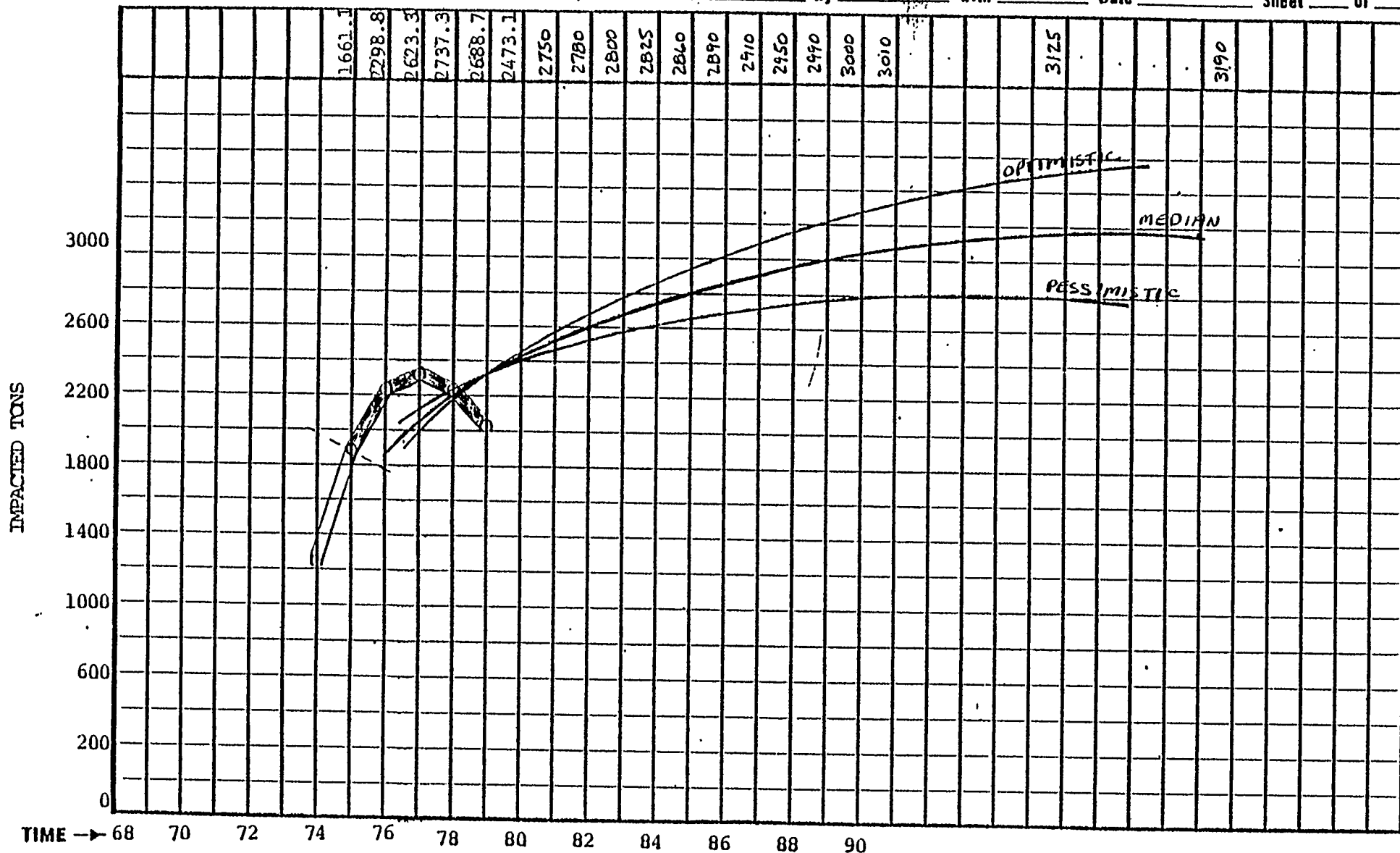


Notation
References

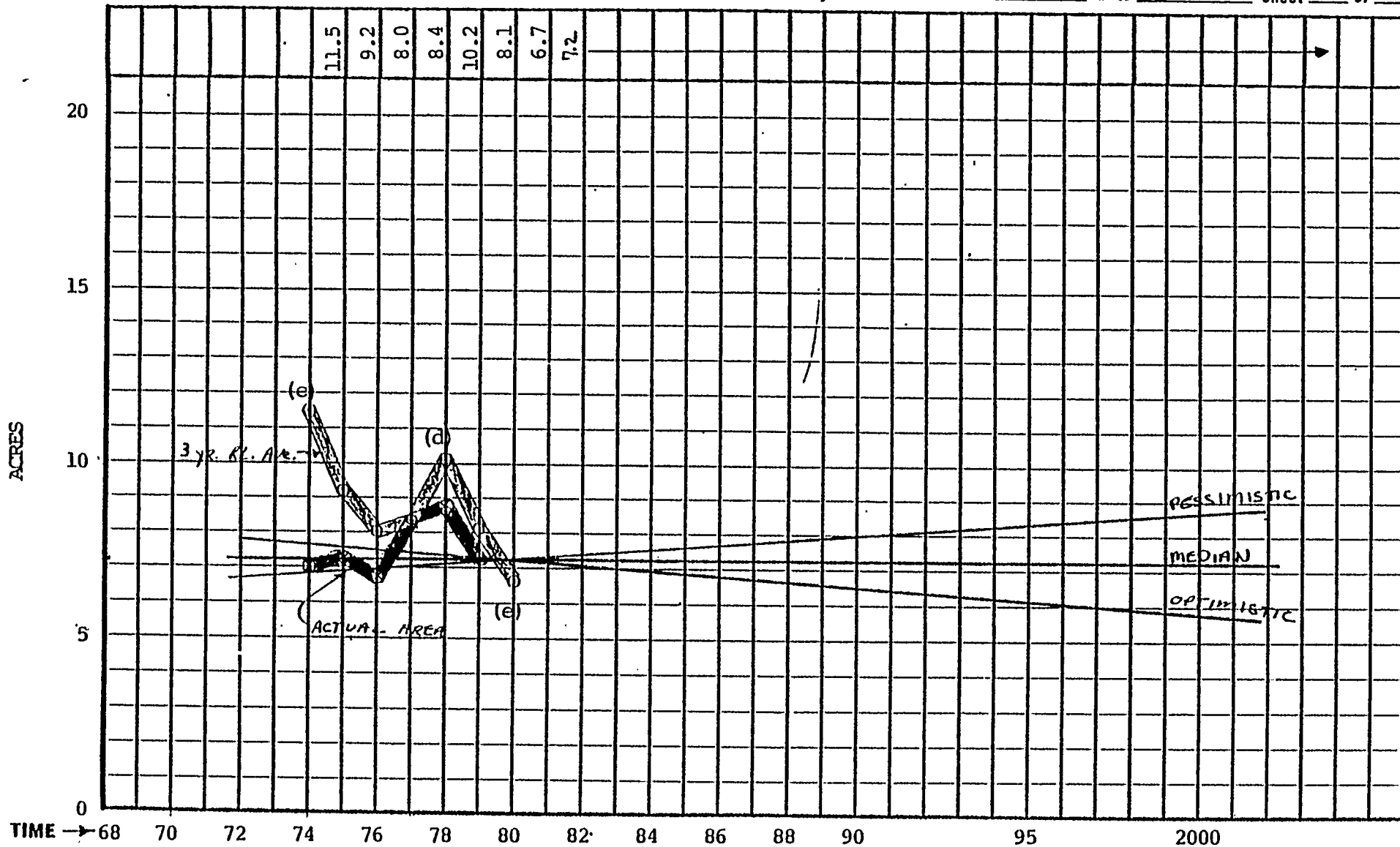
a		a		TITLE: Production area (acres) per equiv. ship (3 yr. rl. av.)-ratio. SOURCE: Base and derived data trends col: (20).
b		i		
c		g		
d		h		

DATA RECORD

Plant NASSCO Project LRFP By J. Ruecker With _____ Date 9/4/80 Sheet 1 of 1



Notation References	a		<p>TITLE: Impacted Tons (3 yr. rolling av.) per production area. (acres) - RATIO</p> <p>SOURCE: Base and derived data trends</p>
	b		
	c		
	d		



Notation
References

a	All storage and staging areas
b	both on and off site.
c	Added steel yard
d	Added Bldg. 75 off site.

e	Influence of office trailers
f	in storage areas.
g	
h	

TITLE: Storage area (acres) (a) per
equiv. ship (3 yr. rl. av.)-ratio.

SOURCE: Base and derived data trends

col: (24)

DATA RECORD

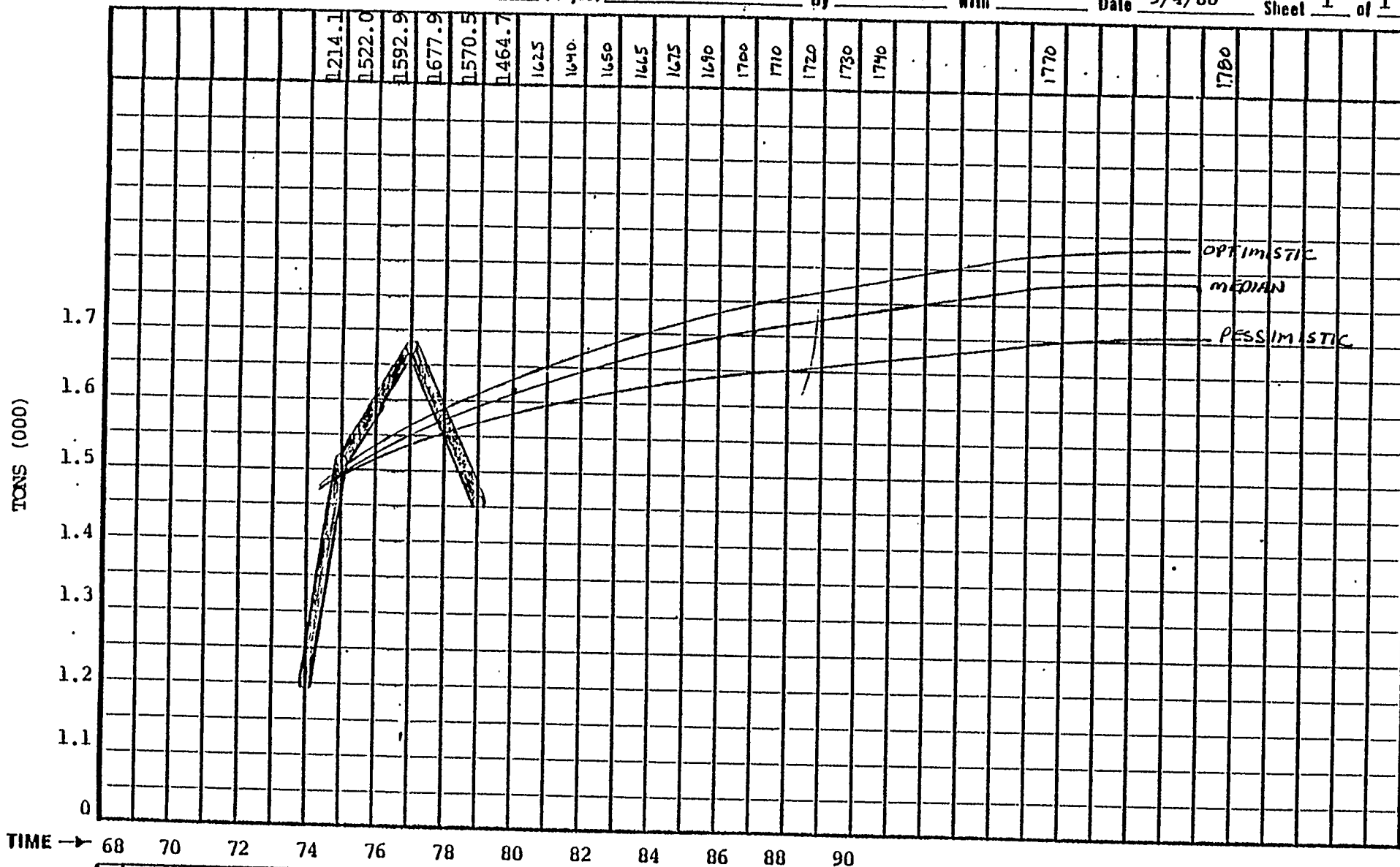
Plant NASSCO

Project LRFP

By J. Ruecker With _____

Date 9/4/80

Sheet 1 of 1



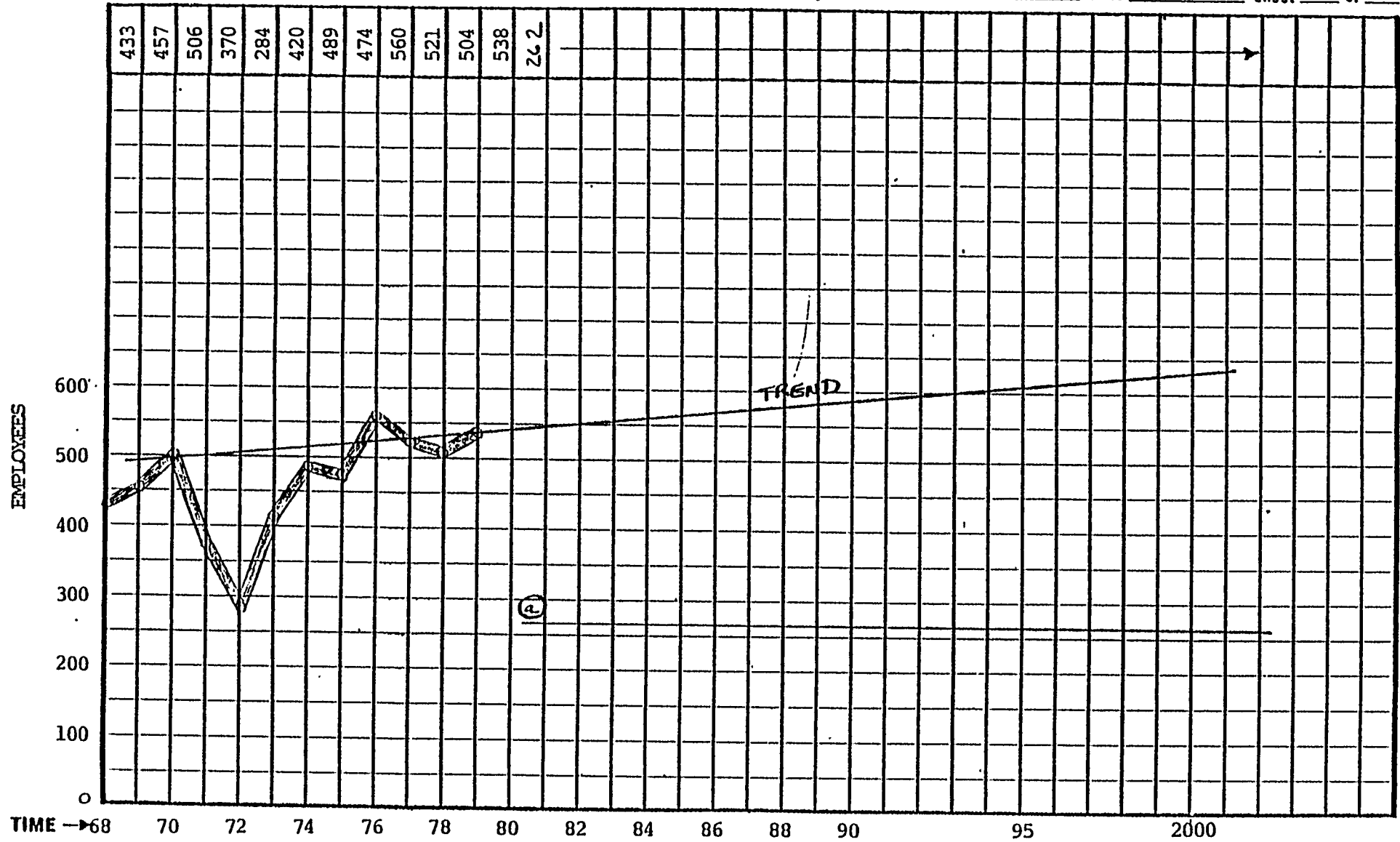
TIME →

Notation
References

a		e		<p>TITLE: Impacted tons (3 yr. rolling av.) per storage area (acres) RATIO</p> <p>SOURCE: Base and derived data trends</p> <p>Co. 26</p>
b		f		
c		g		
d		h		

DATA RECORD

Plant NASSCO Project LRFP By J. Ruecker With _____ Date 9/4/80 Sheet 1 of 1



Notation References	262 PEOPLE/ACRE OF PARKING		<div>TITLE: Employees per acre of parking - RATIO</div> <div>SOURCE: Base and derived data trends</div> <div>Col: (28)</div>
	SHOULD BE THE OBJECTIVE		
	BASED ON 1.6 PEOPLE/CAR &		
	260 SQ. FT./CAR		

DATA RECORD

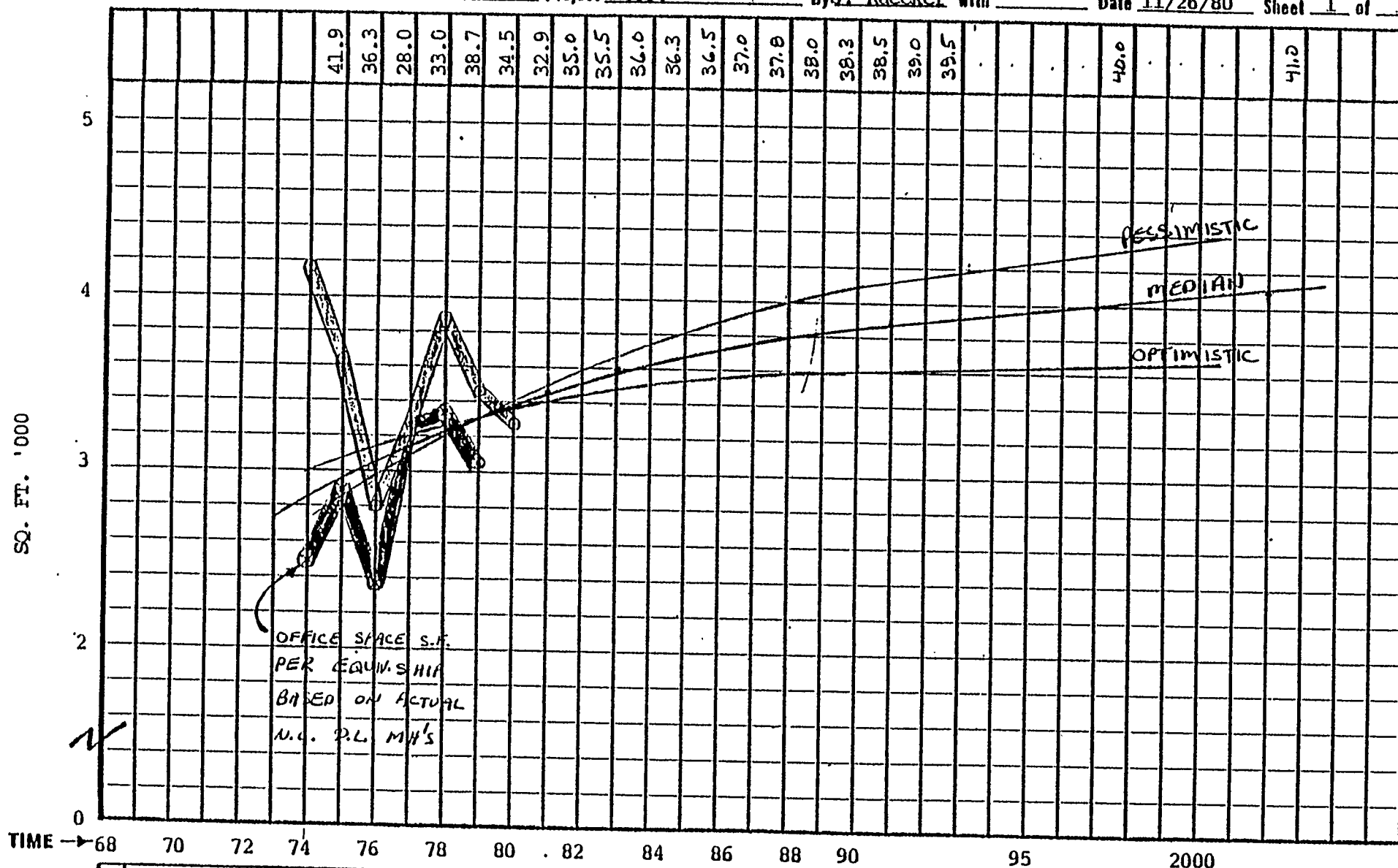
Plant NASSCO

Project IREF

By J. Ruecker With _____

Date 11/26/80

Sheet 1 of 1



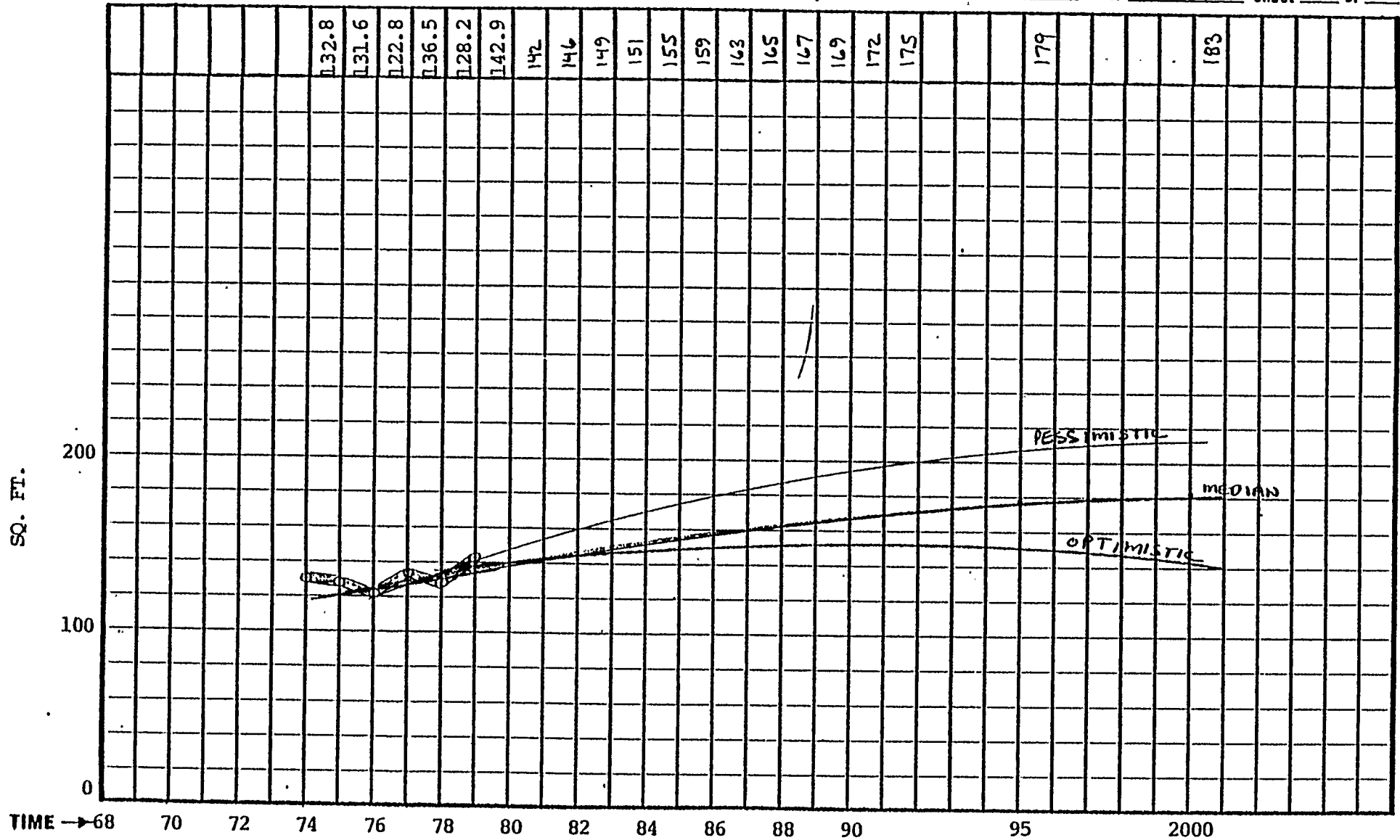
TIME →

Notation
References

a		a		TITLE: Office space (sq. ft.) per equiv.
b		i		ship (3 yr. fl. av.)-ratio.
c		g		SOURCE: Base and derived data trends
d		h		col: (30)

DATA RECORD

Plant NASSCO Project LRFP By J. Ruecker With _____ Date 9/4/80 Sheet 1 of 1



Notation References	a		TITLE: Office space (sq. ft.) per non- prod. employee - RATIO SOURCE: Based and derived data trends Col: (32)
	b		
	c		
	d		

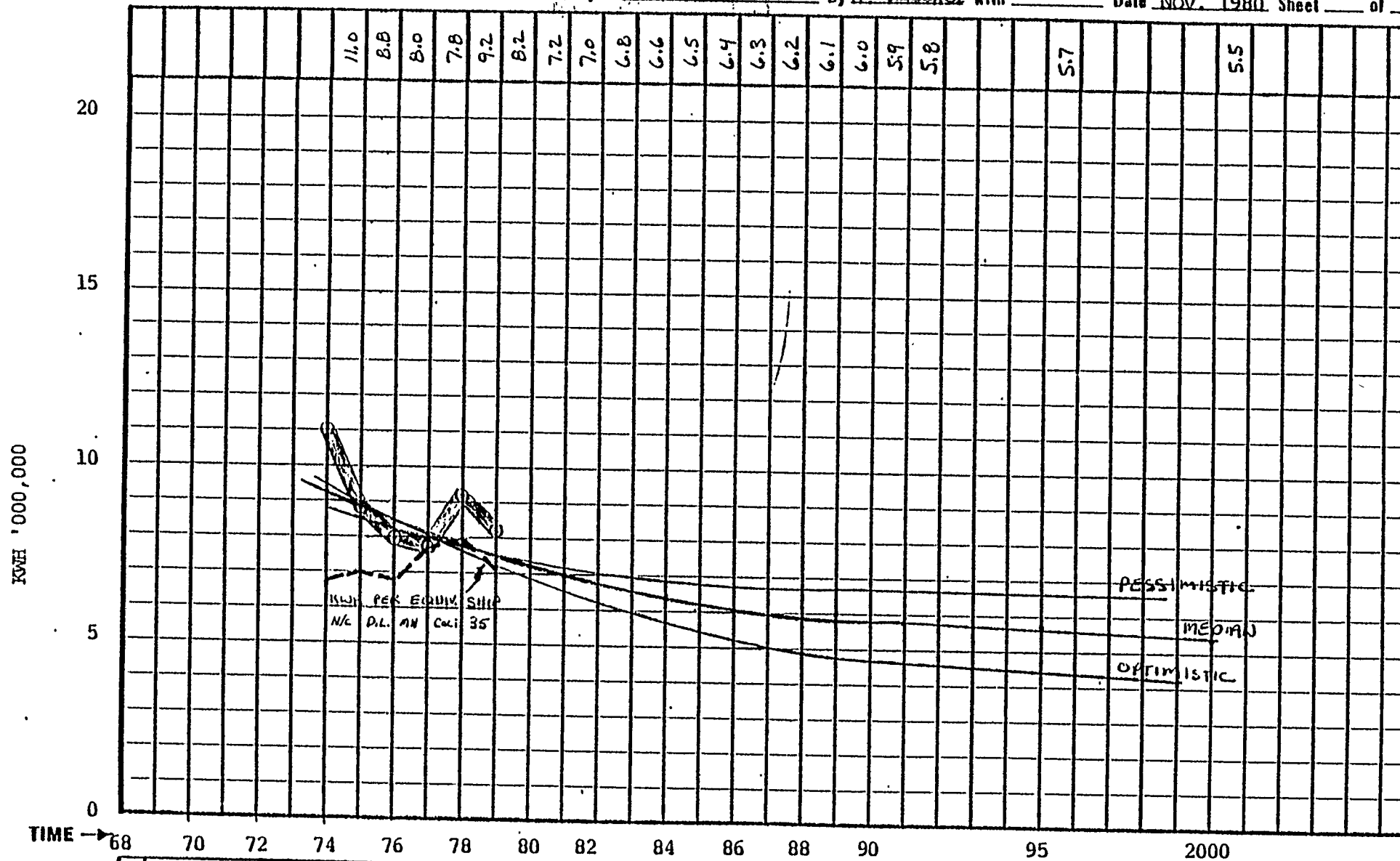
DATA RECORD

Plant NASSCO

Project LRFP

By J. Ruecker With _____

Date Nov. 1980 Sheet _____ of _____

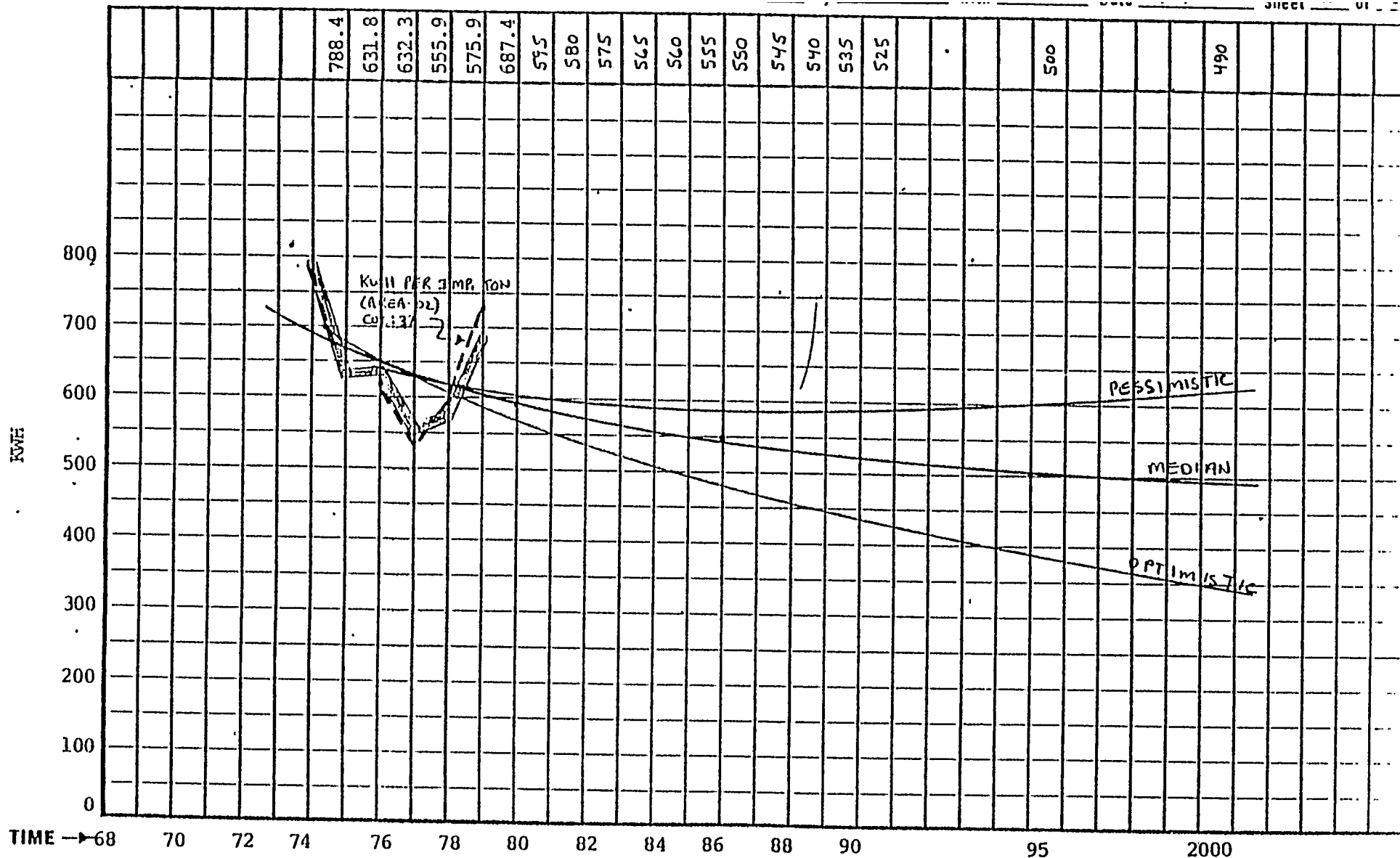


TIME → 68 70 72 74 76 78 80 82 84 86 88 90 95 2000

Notation

a
b

TITLE: KWH per equiv. ship (3 yr. rl.)



TIME → 68 70 72 74 76 78 80 82 84 86 88 90 95 2000

Notation
References

a		e		TITLE: KWH per impacted ton (3 yr. rolling av.) - RATIO
b		f		SOURCE: Base and derived data trends
c		g		Col: (36)
d		h		

BASE AND DERIVED

DATA TRENDS

November 1980

Page 1 of 9

BASE AND DERIVED DATA TRENDS

	(1)-B EQUIV. SHIPS PER N/C D. L. MANHOURS	(2)-B EQUIVALENT SHIPS (3 YR. RL. AV.)	(3)-B NEW CONSTRUCTION DIRECT LABOR EMPLOYEES '000	(4)-B PRODUCTION EMPLOYEES '000
68	-	-	-	2.3
69	-	-	-	3.0
70	-	3.2	-	3.4
71	-	3.5	-	2.4
72	-	2.5	-	1.6
73	-	2.1	-	2.5
74	4.7	2.9	3.3	3.7
75	5.0	4.0	3.5	4.4
76	6.2	5.3	4.3	5.3
77	5.0	5.0	3.5	5.0
78	5.0	4.3	3.5	4.7
79	6.1	5.4	4.3	5.1
80	-	6.4	-	-

BASE AND DERIVED DATA TRENDS

	(5)-B NON-PROD'N EMPLOYEES '000	(6)-D NEW CONSTRUCTION D/L EMPLOYEES PER EQUIV. SHIP (3 ÷ 1)	(7)-D NON-PROD'N EMPL. PER EQUIV. SHIP (5 ÷ 2)	(8)-D NON-PROD'N EMPL. PER EQUIV. SHIP N/C D. L. M (5 ÷ 1)
1968	0.6	-	-	-
1969	0.7	-	-	-
1970	0.7	-	219	-
1971	0.6	-	171	-
1972	0.7	-	280	-
1973	0.9	-	428	-
1974	0.9	702	310	191
1975	1.1	700	275	220
1976	1.2	694	226	194
1977	1.2	700	240	240
1978	1.3	700	302	260
1979	1.3	705	240	213
1980	-	-	-	-

November 1980

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BASE AND DERIVED DATA TRENDS

	(9)-B IMPACTED TONS 3 YR. RL. AV. (CG-1) '000	(10)-B IMPACTED TONS (AREA-02) '000	(11)-B IMP. TONS 3 YR. RL. AV. (AREA-02) '000	(12)-D IMP. TONS 3 YR. RL. AV. PER PROD. EMPL. (9 ÷ 4)	(13)-D IMP. TONS (AREA-02) N/C D.L. EM. (10 ÷ 3)
1968	-	-	-	-	-
1969	-	-	-	-	-
1970	17.4	-	-	5.1	-
1971	15.9	-	-	6.6	-
1972	14.1	-	-	8.8	-
1973	23.2	-	-	9.3	-
1974	39.7	55.3	-	10.7	16.8
1975	55.4	68.7	-	12.6	19.6
1976	66.9	79.1	67.7	12.6	18.4
1977	69.8	65.5	71.1	13.1	18.7
1978	69.1	55.5	66.7	11.8	15.8
1979	64.3	55.5	58.8	10.9	12.9
1980	-	-	-	-	-

BASE AND DERIVED DATA TRENDS

	(14)-B TOTAL ACREAGE CONTROLLED EX. WATER	(15)-D ACRES. PER EQUIV. SHIP (3 YR. RL. AV.) (14 ÷ 2)	(16)-D ACRES PER EQUIV. SHIP (N/C D.L. MH) (14 ÷ 1)	(17)-D IMP. TONS 3 YR. RL. AV. PER ACRE (9 ÷ 14)	(18)- IMP. T (AREA- PER AC (11 ÷
1968	76.9	-	-	-	-
1969	78.3	-	-	-	-
1970	78.3	24.8	-	222.2	-
1971	78.3	22.4	-	203.1	-
1972	78.3	32.0	-	180.1	-
1973	80.3	39.2	-	288.9	-
1974	95.0	33.3	20.2	417.9	-
1975	96.7	24.2	19.3	572.9	-
1976	97.5	18.5	17.7	686.2	694.4
1977	97.9	19.7	19.6	713.0	726.3
1978	100.3	23.3	20.2	688.9	665.0
1979	100.3	18.6	16.4	641.1	586.2
1980	101.4	15.9	-	-	-

November 1980

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BASE AND DERIVED DATA TRENDS

	(19)-B PRODUCTION AREA (ACRES)	(20)-D PROD. AREA (ACRES) PER EQUIV. SHIP 3 YR. RL. AV. (19 ÷ 2)	(21)-D PROD. AREA (ACRES) PER EQUIV. SHIP N/C D.L. MH (19 ÷ 1)	(22)-D IMP. TONS 3 YR. RL. AV. PER PROD. AREA (ACRES) (9 ÷ 19)
1968	-	-	-	-
1969	-	-	-	-
1970	-	-	-	-
1971	-	-	-	-
1972	-	-	-	-
1973	-	-	-	-
1974	23.9	8.4	5.1	1,661.1
1975	24.1	6.0	4.8	2,298.8
1976	25.5	4.8	4.1	2,623.5
1977	25.5	5.1	5.1	2,737.3
1978	25.7	6.0	5.1	2,688.7
1979	26.0	4.8	4.3	2,473.1
1980	28.2	4.4	-	-

BASE AND DERIVED DATA TRENDS

	(23)-B STORAGE AREA (ACRES)	(24)-D STORAGE AREA (ACRES) PER EQUIV. SHIP 3 YR. RL. AV. (23 - 2)	(25)-D STORAGE AREA (ACRES) PER EQUIV. SHIP N/C D.L. MH (23 - 1)	(26)-D IMP. TONS 3 YR. RL. AV. PER STOR. AREA (ACRES) (9 - 23)	(27)- PARKI AREA (ACRE
1968	-	-	-	-	6.7
1969	-	-	-	-	8.1
1970	-	-	-	-	8.1
1971	-	-	-	-	8.1
1972	-	-	-	-	8.1
1973	-	-	-	-	8.1
1974	32.7	11.5	7.0	1,214.1	9.4
1975	36.4	9.2	7.3	1,522.0	11.6
1976	42.0	8.0	6.8	1,592.9	11.6
1977	41.6	8.4	8.3	1,677.9	11.9
1978	44.0	10.2	8.8	1,570.5	11.9
1979	43.9	8.1	7.2	1,464.7	11.9
1980	42.7	6.7	-	-	11.9

November 1980

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BASE AND DERIVED DATA TRENDS

(28)-D
EMPLOYEES
PER ACRE
OF PARKING
 $\left(\frac{4 + 5}{27}\right)$

(29)-B
OFFICE SPACE
(SQ. FT.)
'000

(30)-D
OFFICE SPACE
(SQ. FT.) PER
EQUIV. SHIP
3 Y& RL. AV.
'000
(29 ÷ 2)

(31)-D
OFFICE SPACE
(SQ. FT.) PER
EQUIV. SHIP
N/C D.L. MH
(29 ÷ 1)

1968	433			
1969	457			
1970	506			
1971.	370			
1972	284			
1973	420			
1974	489	119.5	41.9	25.4
1.975	474	144.8	36.3	29.0
1976	560	147.4	28.0	23.8
1977	521	163.8	33.0	32.8
1978	504	166.6	38.7	33.3
1.979	538	185.8	34.5	30.5
1980		210.1	32.9	

BASE AND DERIVED DATA TRENDS

	(32)-D OFFICE SPACE (SQ. FT.) PER NON-PROD. EMPLOYEE (29 ÷ 5)	(33)-B ELXC. USAGE KWH '000,000	(34)-D KWH PER EQUIV. SHIP 3 YR. RL. AV. '000,000 (33 ÷ 2)	(35)-D KWH PER EQUIV. SHIP N/C D.L. MH '000,000 (33 ÷ 1)
1968				
1969				
1970				
1971				
1972				
1973				
1974	132.8	31.3	11.0	6.7
1975	131.6	35.0	8.8	7.0
1976	122.8	42.3	8.0	6.8
1977	136.5	38.8	7.8	7.8
1978	128.2	39.8	9.2	8.0
1979	142.9	44.2	8.2	7.2
1980				

November 1980

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BASE AND DERIVED DATA TRENDS

(36) - D
KWH PER
IMP. TON
3 YR. RL. AV.
(33 ÷ 9)

(37) - D
KWH PER
IMP. TON
(AREA-O 2)
(33 ÷ 11)

1968

1969

1970

1971

1972

1973

1974 788.4

1975 631.8

1976 632.3 624.8

1977 555.9 545.7

1978 576.0 596.7

1979 687.4 752.0

1980

HISTORICAL TONNAGE

DATA -

September 1980

SHIP DESIGNATIONS

AFS	Combat Store Ship
LST	Landing Ship Tank
OBO	Ore Bulk Oil Carrier
CT	Coronado Class Tanker
SCT	San Clemente Class Tanker
SDT	San Diego Class Tanker
AD	Destroyer Tender
CPC	Carlsbad Class Product Carrier
T-ARC	Cable Repair Ship
IPC	Ingram Class Product Carrier
LPC	La Jolla Class Product Carrier

HISTORICAL SHIP

DATA

October 1980

PRODUCT MIX BY ACTUAL TONS ACROSS PLATEN
AND MANHOURS (CG 1-9 MINUS 8)

	<u>HOURS CG 1-9 MINUS 8</u>	<u>% MH</u>	<u>TONS</u>	<u>% TONS</u>	<u>MH/TON</u>
<u>1974</u>					
Navy (1)	1,698,489	26%	8,538	19%	198
Com .	4,849,804	74%	35,711	81%	136
<u>1975</u>					
Navy	592,818	9%	0	0%	
Com .	6,334,277	91%	62,051	100%	102
<u>1976</u>					
Navy	646,142	7%	0	0%	-
Corn.	7 , 9 8 4 , 4 8 3	93%	77,788	100%	103
<u>1977</u>					
Navy	839,862	12%	3,491	5%	241
Corn.	6,177,131	88%	61,335	95%	101
<u>1978</u>					
Navy	3,824,961	55%	10,075	25%	380 (2
Corn.	3,147,747	45%	30,756	75%	102
<u>1979</u>					
Navy	5,820,243	68%	11,003	29%	529 (2
Corn.	2,734,659	32%	27,566	71%	99

(1) AOR Navy Tanker

(2) Possible increase due to outfitting manhours.

August 21, 1980

<u>EQUIVALENT IMPACTED TONS</u>				
<u>COST GROUP-1</u>				
<u>YEAR</u>	<u>NAVY</u>	<u>COMMERCIAL</u>	<u>TOTAL</u>	<u>3 YEAR ROLLING AVERAGE</u>
1968	14,019	--	14,019	--
1969	22,824		22,824	
1970	15,208		15,208	17,350
1971	7,464	2,281	9,745	15,925
1972	.9	\$7,354.	17,363	14,105
1973	264	42, 243	42,507	23,205
1974	21,430	37, 740	59,170	39,680
1975	--	64,407	64,407	55,361
1976	--	77,009	77,009	66,862
1977	12,358	55,753	68,111	69,842
1978	35,666	26,450	62,116	69,078
1979	38,951	23, 731	62,682	64,.303
1980				

September 1980

EQUIVALENT IMPACTED TONS BACKUP DATA
COST GROUP-1

<u>YEAR</u>	<u>TYPE VESSEL</u>	<u>ACTUAL TONS ACROSS PLATEN</u>	<u>EQUIVALENT IMPACT RATIO</u>	<u>EQUIV. IMPACTED TONS</u>
1968	AFS	734	1.86	1,365
	LST	12,285	1.03	12,654
				14,019
1969	AFS	5,541	1.86	10,306
	LST	12,153	1.03	12,518
				-
1970	LST	14,765	1.03	15,208
1971	LST	7,246	1.03	7,464
	Barge	4,523	.50 (est.)	2,262
	OBO	22	.87	19
				9,745
1972	LST	9	1.03	9
	Barge	310	.50	155
	O B O	15,132	.87	13,165
	CT	3,334	1.21	4,034
				17,363
1973	OBO	15,028	.87	13,074
	CT	9,870	1.21	11,943
	SCT	17,226	1.00	17,226
	AOR	105	2.51	264
				42,507
1974	CT	9,664	1.21	11,693
	SCT	26,047	1.00	26,047
	AOR	8,538	2.51	21,430
				59,170
1975	SCT , .	50,831	1.00	50,831
	CT	11,220	1.21	13,576
				64,407
1976	SCT	57,475	1.00	57,475
	CT	5,898	1.21	7,137
	S DT	14,415	.86	12,397
				77,009
1977	SCT	21,464	1.00	21,464
	SDT	39,871	.86	34,289
	AD	3,491	3.54	12,358
				68,111
1978	SDT	30,756	.86	26,450
	AD	10,075	3.54	35,666
				62,116
1979	SDT	27,511	.86	23,659
	C P C	55	1.30 (est.)	72
	AD	11,003	3.54	38,951
				62,682

Sept. 1980

EQUIVALENT IMPACTED TONS RATIO

BASED ON COST GROUP 1

<u>NAVY</u>	<u>TONS</u>	<u>MAN HRS.</u>	<u>MH/T</u>	<u>EQUIV. IMPACTED 1</u>
LST	6,607	300,000 Av.	45.4	1.03
AFS	5,170	425,1.63	82.2	1.86
AOR -7	8,661	960,000	110.8	2.51
AD-41/2/3	8,046 AV	1,257,300	156.3	3.54

COMMERCIAL

OBO	15,540	596,188	38.4	0.87
CT	6,619	353,737	53.4	1.21
SCT	13,573	572,443	44.2	1.00 Base
SDT	28,524	1,080,008	37.9	0.86
CPC				Estim. 1.30
Hull 360				Estim. 0.50

September, 1980

EQUIVALENT IMPACTED TONS

AREA-02 PLATENS

<u>YEAR</u>	<u>TOTAL</u>	<u>3 YEAR ROLLING AVERAGE</u>
1974	55,330	
1975	68,671	
1976	79,106	67,702
1977	65,513	71,097
1978	55,461	66,693
1979	55,456	58,810
1980		

September 1980

EQUIVALENT IMPACTED TONS BACKUP DATA
AREA-02 PLATENS

<u>YEAR</u>	<u>TYPE VESSEL</u>	<u>ACTUAL TONS ACROSS PLATEN</u>	<u>EQUIVALENT IMPACT RATIO</u>	<u>EQUIV. IMPA TONS</u>
1974	CT	9,664	1.59	15,366
	SCT	26,047	1.00	26,047
	AOR	8,538	1.63	13,917
				55,330
1.975	SCT	50,831	1.00	50,831
	CT	11,220	1.59	17,840
				68,671
1976	SCT	57,475	1.00	57,475
	C T	5,898	1.59	9,378
	S DT	14,415	.85	<u>12,253</u>
				<u>79,106</u>
1977	SCT	21,464	1.00	21,464
	SDT	39,871	.85	33,890
	AD	3,491	2.91	10,159
				65,513
1978	SDT	30,756	.85	26,143
	AD	10,075	2.91	29,318
				55,461
1979	SDT	27,511	.85	23,384
	CPC		.97	53
	AD	11,003	2.91	32,019
				55,456

Sept. 1980

EQUIVALENT IMPACTED TONS RATIO

BASED ON AREA-02 (1)

<u>NAVY</u>	<u>TONS</u>	<u>MAN HRS.</u>	<u>MH/T</u>	<u>EQUIV. IMPACTED RATIO</u>
LST	6,607	(2)		
AFS	5,170 .	(2)		
AOR -7	8,661	255,499	29.5	1.63
AD-41/2/3	8,046 Av.	423,220	52.6	2.91
T-ARC	5,400	333,720	61.8	3.41
<u>COMMERCIAL</u>				
OBO	15,540	(2)	—	— - -
CT	6,619	189,965	28.7	1.21
SCT	13,573	245,671	18.1	1.00 Base
S DT	28,524	436,417	15.3	0.86
cpc		— -	17.5	.97
Hull 360		(2)	(2)	- - - -

(1) Data from trade class report.

(2) Data not available.

EQUIVALENT IMPACTED TONS

The equivalent impacted tons were generated so that a more meaningful indicator could be used to project future yard and platen requirements. The equivalent impacted ton has been developed on the following:

1. Total area-02 (platens) manhours by type vessel.
2. Average hull and structural steel tonnage across platens by type vessel.
3. Dividing area-02 manhours by the tonnage equals manhours per ton.
4. San Clemente Class Tanker (SCT) used as base for equivalent impacted tons indicator.
5. The manhours per ton by type vessel divided by the SCT . manhours per ton equals equivalent impacted ton indicator for that type of vessel.

EXAMPLE :

<u>TYPE VESSEL</u>	<u>TONS</u>	<u>AREA-02 MANHOURS</u>	<u>MANHOURS/ TON</u>	<u>EQUIVALENT IMPACTED TONS RATIO</u>
SCT	13,573	245,671	18.1	1.00 Base
CT	6,619	189,965	28.7	1.59
SDT	28,524	436,417	15.3	.85
AOR	8,661	255,499-	29.5	1.63
AD	8,046	423,220	52.6	2.91

DATA RECORD

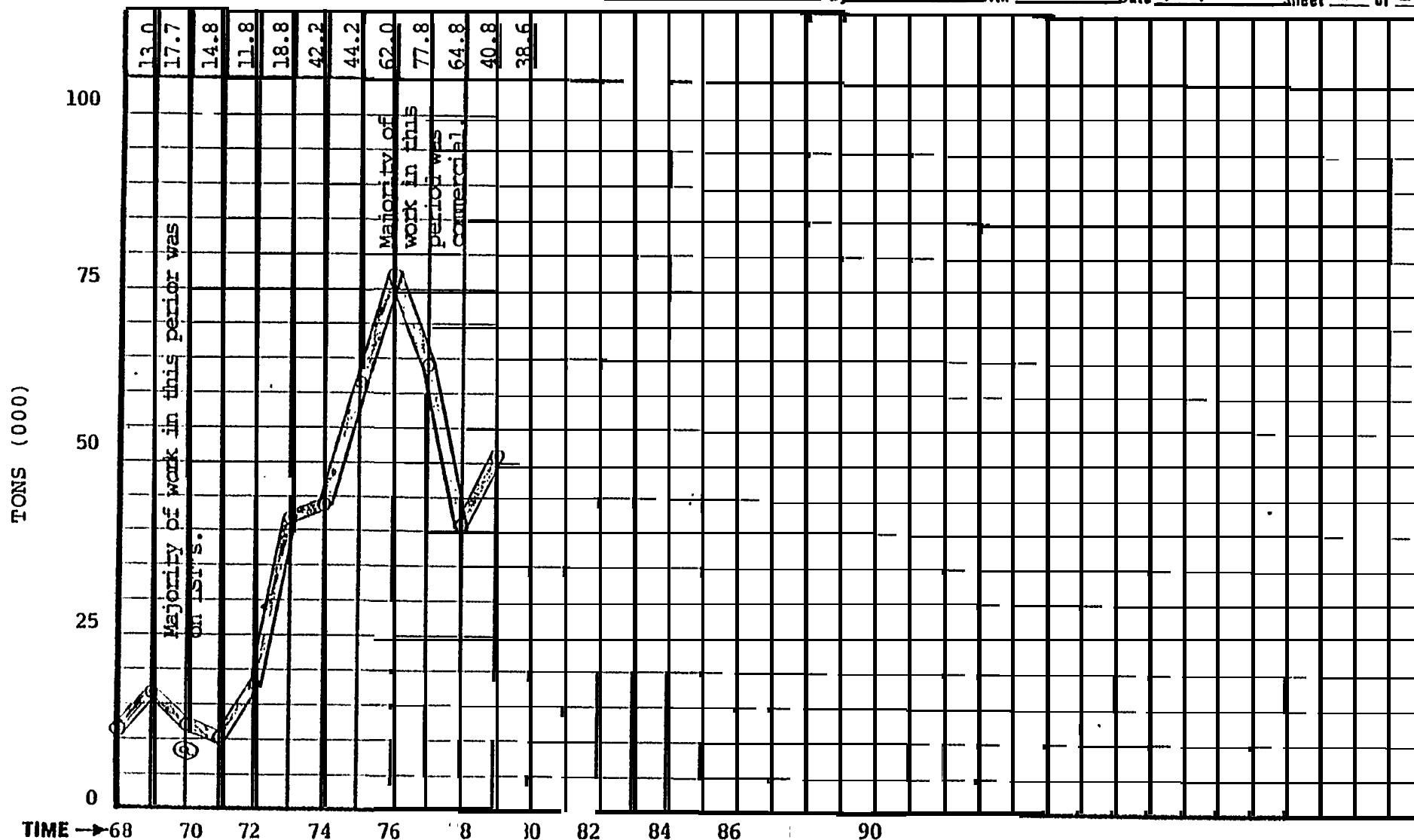
Plant NASSCO

Product I.R.F.P.

By J. Ruecker With _____

Date 8/20/80

Sheet 1 of 1



Notation
References

■	STEEL IN 1970 10/0 TO 11/0	■	time/tonnage across plate, actual
□		■	cons.
■		■	source/status of steel sub assembly
■		■	yearly summary report

RMA-350

RICHARD MUTH & ASSOCIATES

KANSAS CITY, MO.

(MAY BE REPRODUCED FOR IN-COMPANY USE PROVIDED ORIGINAL SOURCE IS NOT DELETED.)

DATA RECORD

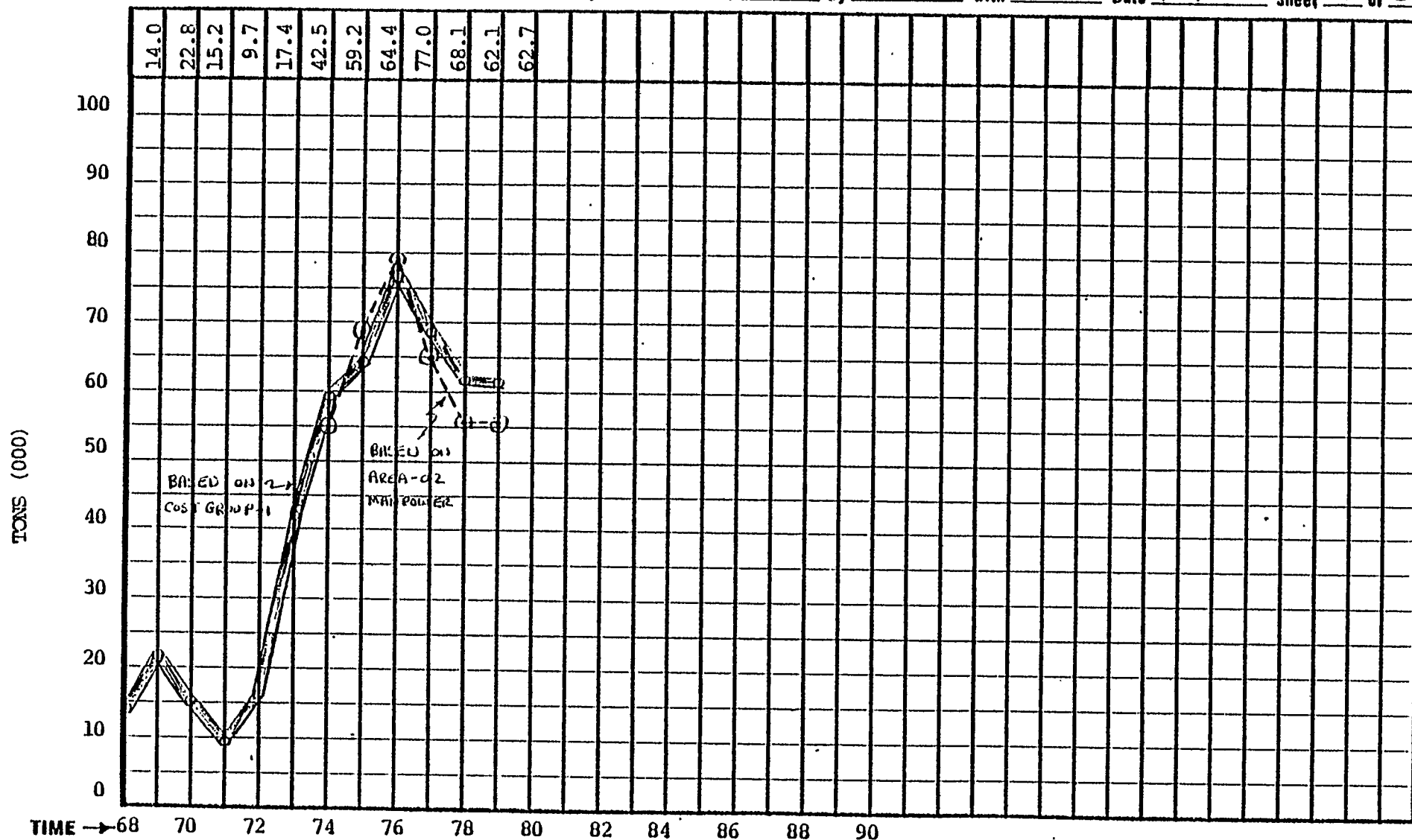
Plant NASSOO

Project LRFP

By J. Ruecker With

Date 8/26/80

Sheet 1 of 1



TIME →

a	Developed using equivalent ship ratio based on total manhours per ship using SCT as the base.
---	---

TITLE: Impacted Tons

SOURCE: Impacted Tons Chart (a)

DATA RECORD

Plant NASSCO

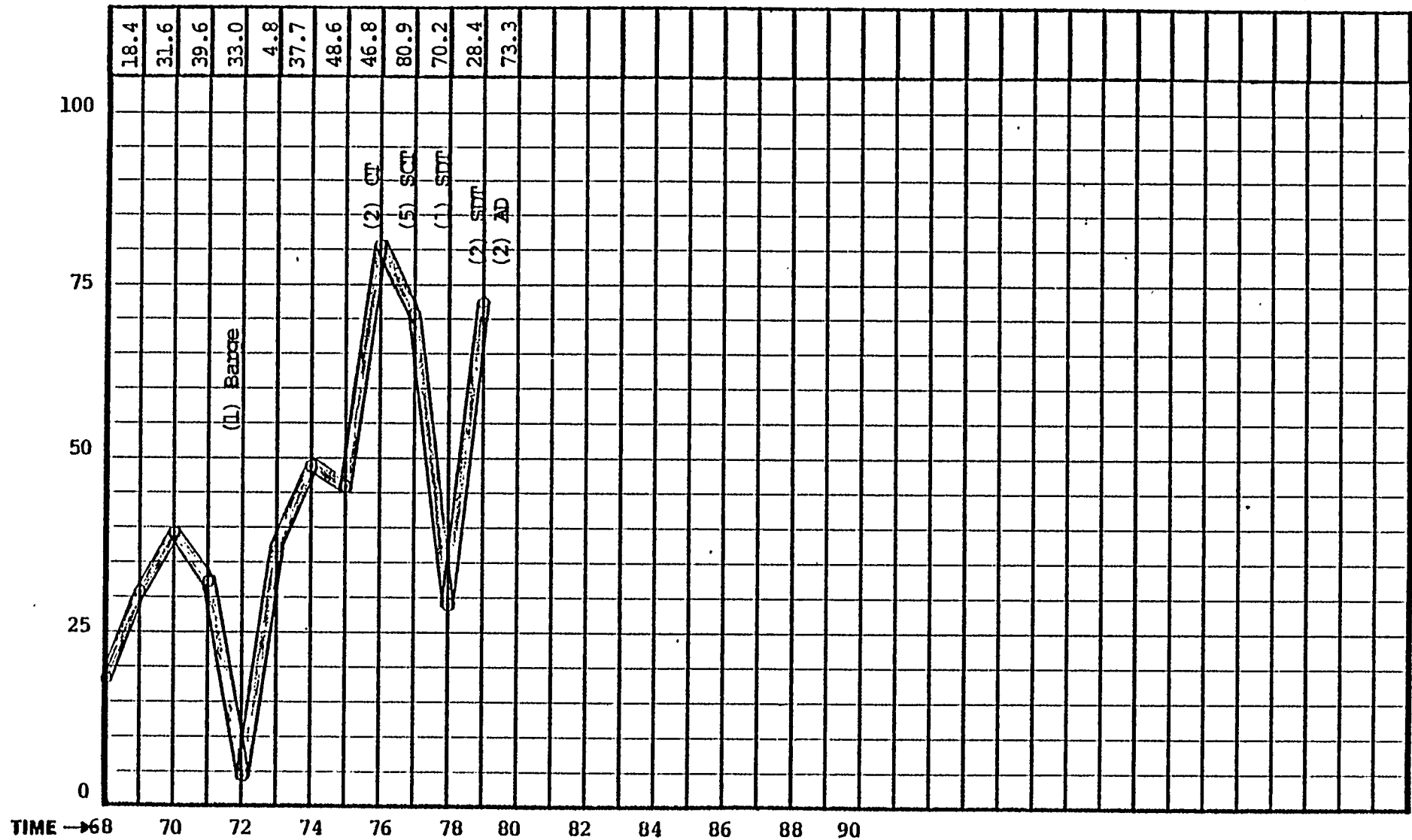
Project LRF

By J. Ruecker With

Date 8/20/80

Sheet 1 of 1

TONS (000)



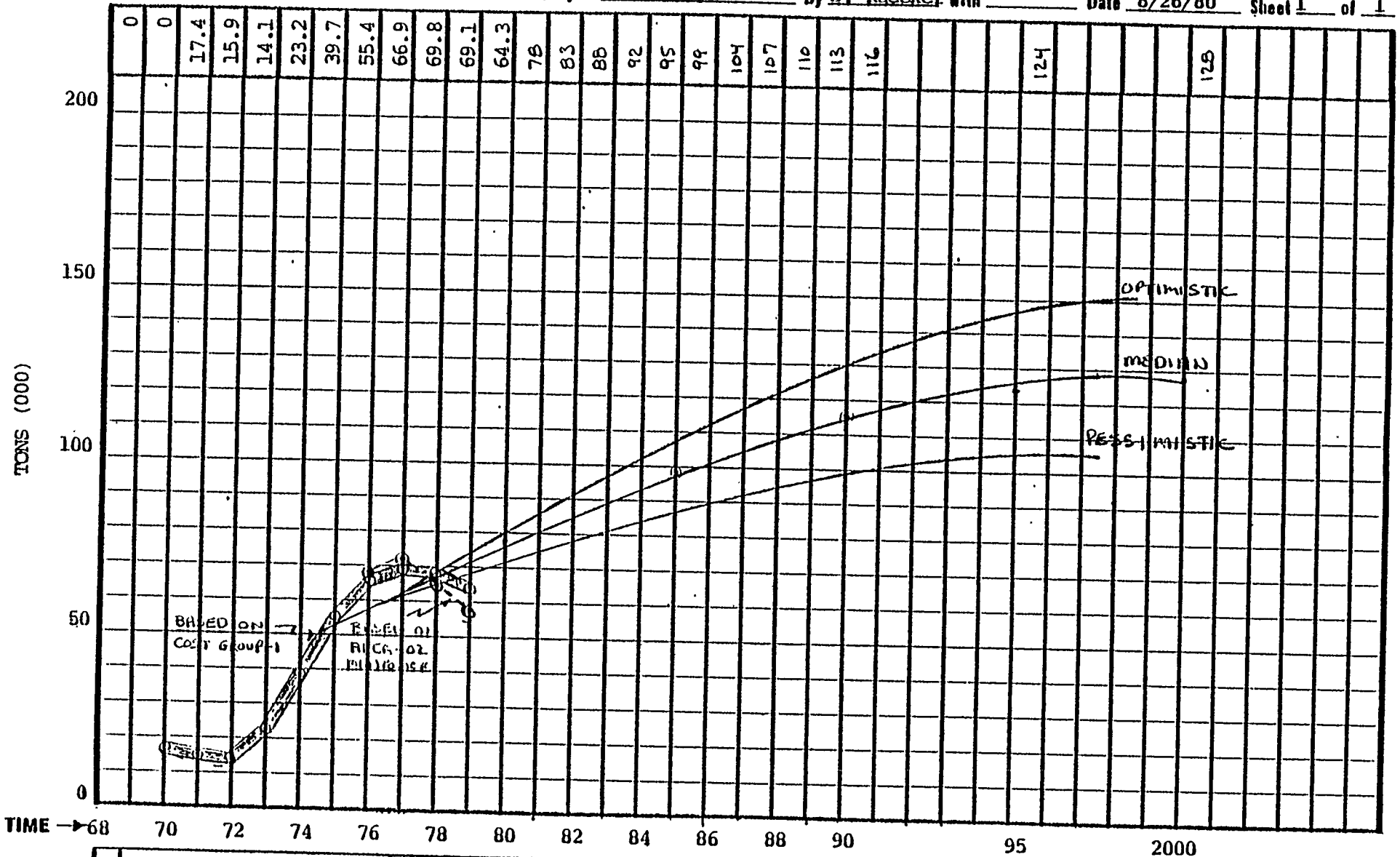
TIME → 68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

•	Tons of steel used for complete hull and super-structure.				TITLE: Tonnage for commercial and Navy ships.
•					SOURCE: Status of steel
					Final tonnage by Hull & Launch dt.

DATA RECORD

Plant NASSCO Project LRFP By J. Ruecker With _____ Date 8/26/80 Sheet 1 of 1



Notation References	a	Developed using equivalent
	b	ship ratio based on total
	c	manhours per ship using SCT
	d	as the base.

e		TITLE: Impacted tons three year rolling average.
f		
g		SOURCE: Impacted tons chart (a)
h		

COMMERCIAL

August 1980

YEAR LAUNCH	HULL #	TYPE	MONTHS IN		TONS OF STEEL	REVENUE \$	HOURS BY COST GROUP (1)									TOTAL HOURS
			BLDG. POSIT.	O/F			1	2	3	4	5	6	7	8	9	
1972	360	Barge	6	3	4,839	6,876,000			INFORMATION MISSING							
TOTAL	1		6	3	4,839	6,876,000										
1973	382	OBO	10	6	15,581	31,333,500	573,380	89,899	27,460	12,983	184,626	107,266	-	128,673	359,597	1,483,884
	383	OBO	8	5	15,498	31,333,500	618,996	88,549	28,301	13,238	168,005	101,973	-	131,274	310,869	1,461,205
	384	CT	8	5	6,630	18,839,000	306,933	80,640	22,575	10,855	147,496	101,120	-	61,360	257,045	988,024
TOTAL	3		26	16	37,709	81,506,000	1,499,309									3,933,113
1974	385	CT	8	6	6,630	18,839,000	325,285	71,144	21,852	7,918	147,948	95,921	-	67,800	244,029	981,897
	386	CT	8	4	6,630	18,839,000	375,216	77,725	20,840	9,461	172,430	107,851	-	76,139	269,421	1,109,083
	390	SCT	8	9	13,361	28,976,666	576,647	106,517	33,497	14,746	216,035	162,328	-	59,729	353,349	1,522,848
	391	SCT	8	6	13,361	28,976,666	586,432	101,226	331,102	12,707	206,126	152,625	-	57,050	318,614	1,467,882
TOTAL	4		32	25	39,982	95,631,332	1,863,580									5,081,710

(1) Cost group data taken from weekly budget recap report.

COMMERCIAL.

August 1980 p. 2

[illegible]

YEAR LAUNCH	HULL #	TYPE	MONTHS IN		TONS OF STEEL	REVENUE \$	HOURS BY COST GROUP ⁽¹⁾									TOTAL HOURS
			BIDG. POSIT.	O/F			1	2	3	4	5	6	7	8	9	
1977	399	SCT	7	9	13,960	33,738,750	539,330	104,074	29,831	14,497	197,627	153,711	-	29,017	331,760	1,399,847
	400	SCT	7	6	13,960	33,738,750	538,085	100,423	28,567	14,642	199,160	161,552	-	29,657	341,649	1,413,735
	401	SCT	7	6	13,960	33,738,750	532,578	106,310	27,502	14,389	214,598	165,115	-	30,912	362,109	1,453,513
	405	SDT	10	7	28,364	83,258,000	1,032,387	177,823	51,739	29,855	321,021	242,211	-	246,745	602,294	2,704,075
TOTAL	4		31	28	70,244	89,474,250	2,642,380									6,971,170
1978	406	SDT	10	6	28,393	83,258,000	1,029,892	152,956	39,583	26,138	308,593	283,887	-	44,159	545,151	2,437,800
1979	408	SDT	10	5	28,670	91,118,500	1,158,577	157,899	40,940	19,024	297,335	242,925	-	171,398	561,657	2,649,755
1980	409	SDT	9	5	28,670	91,118,500	1,099,176	167,307	37,586	19,003	315,495	236,336	-	33,234	609,470	2,517,607
	415 ⁽²⁾	CPC	8	5	9,211	50,590,033	547,428	83,269	52,049	22,208	204,774	221,265	-	241,356	430,462	1,802,811
	416 ⁽²⁾	CPC	7	5	8,909	50,590,033	471,735	76,533	48,785	20,900	190,021	183,346	-	28,185	397,941	1,417,446
TOTAL	3		24	15	46,790	192,299,166	2,118,339									5,737,864

(2) Manhours based on projections.

COMMERCIAL

August 1980 p. 4

YEAR LAUNCH	HULL #	TYPE	MONTHS IN		TONS OF STEEL	REVENUE \$	HOURS BY COST GROUP ⁽¹⁾									TOTAL HOURS
			BIDG. POSIT.	O/V			1	2	3	4	5	6	7	8	9	
1981	417 (2)	CPC	7	5	8,909	50,590,333	436,635	76,533	43,505	25,900	178,021	173,346	-	16,835	380,845	1,331,700
	419 (2)	LPC	7	5		47,862,600	390,920	23,990	39,627	25,997	111,549	149,847	-	182,000	271,154	1,246,375
TOTAL																
1982	424 (2)	LPC	7	6			463,276	41,422	43,873	23,411	113,514	150,814	-	129,692	285,545	1,284,256
	425 (2)	LPC	7	5			411,234	40,598	42,224	22,945	107,345	147,815	-	13,025	285,295	1,102,540
	426 (2)	LPC	7	5			408,260	40,293	41,910	22,773	106,542	146,704	-	13,025	285,295	1,096,621
	420 (2)	LPC	7	5		47,862,600								16,000		1,059,918

NAVY

August 1980

[illegible]

NAVY

August 1980 p. 2

[illegible]

YEAR LAUNCH	HULL #	TYPE	MONTHS IN		TONS OF STEEL	REVENUE \$	HOURS BY COST GROUP (1)									TOTAL HOURS
			BLDG. POSIT.	O/F			1	2	3	4	5	6	7	8	9	
1974	193	AOR-7	11	22	8,661	73,351,000	959,734	184,743	129,320	89,805	700,189	306,147	17,645	501,382	666,186	3,555,151
TOTAL		1	11	22	8,661	73,351,000	959,734									3,555,151
1979	(1) 411	AD-41	19	13	7,894	184,388,000	1,276,461	182,902	319,742	107,377	1,609,067	937,819	17,747	1,287,371	1,353,281	7,091,767
	90X 412	AD-42	18	16	8,028	184,388,000	1,238,135	149,958	302,272	61,933	1,410,170	589,294	16,633	106,359	1,010,697	4,885,451
TOTAL		2	37	29	15,922	368,776,000	2,514,596									11,977,218
1980	413 (2)	AD-43	18	14	8,217	209,132,000	1,148,017	167,493	301,102	82,528	1,465,748	787,046	17,282	386,685	1,264,699	5,620,000
TOTAL			18	14												
1981	414 (2)	AD-44	16	14		234,779,000	1,210,335	161,536	290,001	81,786	1,347,198	740,893	17,438	431,505	1,136,074	5,416,766
TOTAL			16	14												
1982	418 (2)	T-ARC	12	12		107,153,000	671,762	65,557	142,075	106,463	162,691	208,966	-	520,368	2,044,351	2,564,719

(1) Still some work charged to 411 at this time but listed 100% complete.

EQUIVALENT SHIP

DATA

DATA RECORD

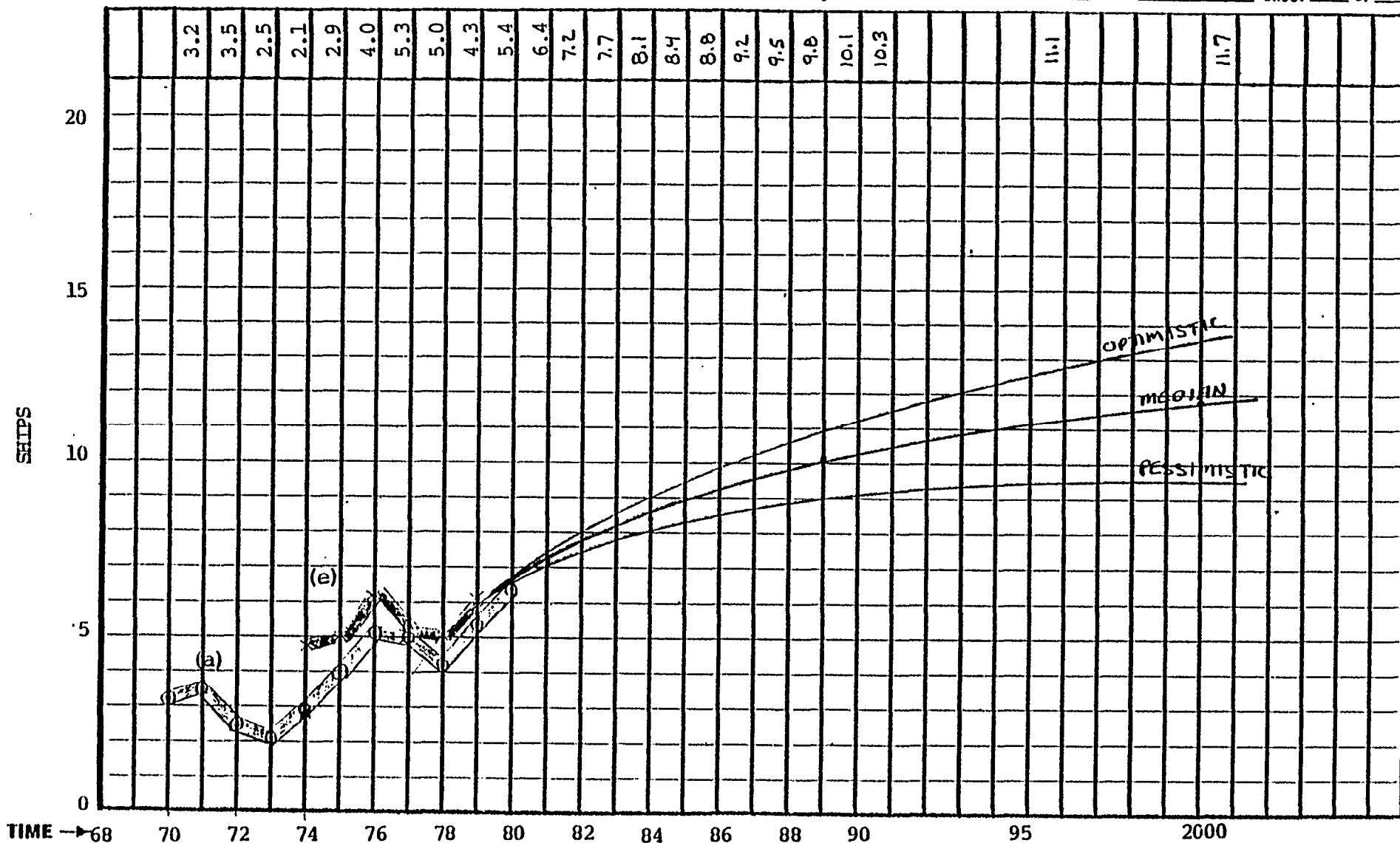
Plant NASSCO

Project LRFP

By J. Ruecker With _____

Date 11/26/80

Sheet 1 of 1



TIME → 68 70 72 74 76 78 80 82 84 86 88 90 95 2000

Notation
References

- a Developed using equivalent
- b ship ratio based on total
- c manhours per ship using SCT
- d as the base.

- e Developed using actual N/C
- f D. L. hours per year divided
- g by SCT manhours.
- h

TITLE: Equivalent ships (3 yr. rl. av.)

SOURCE: Equivalent ship chart.

DATA RECORD

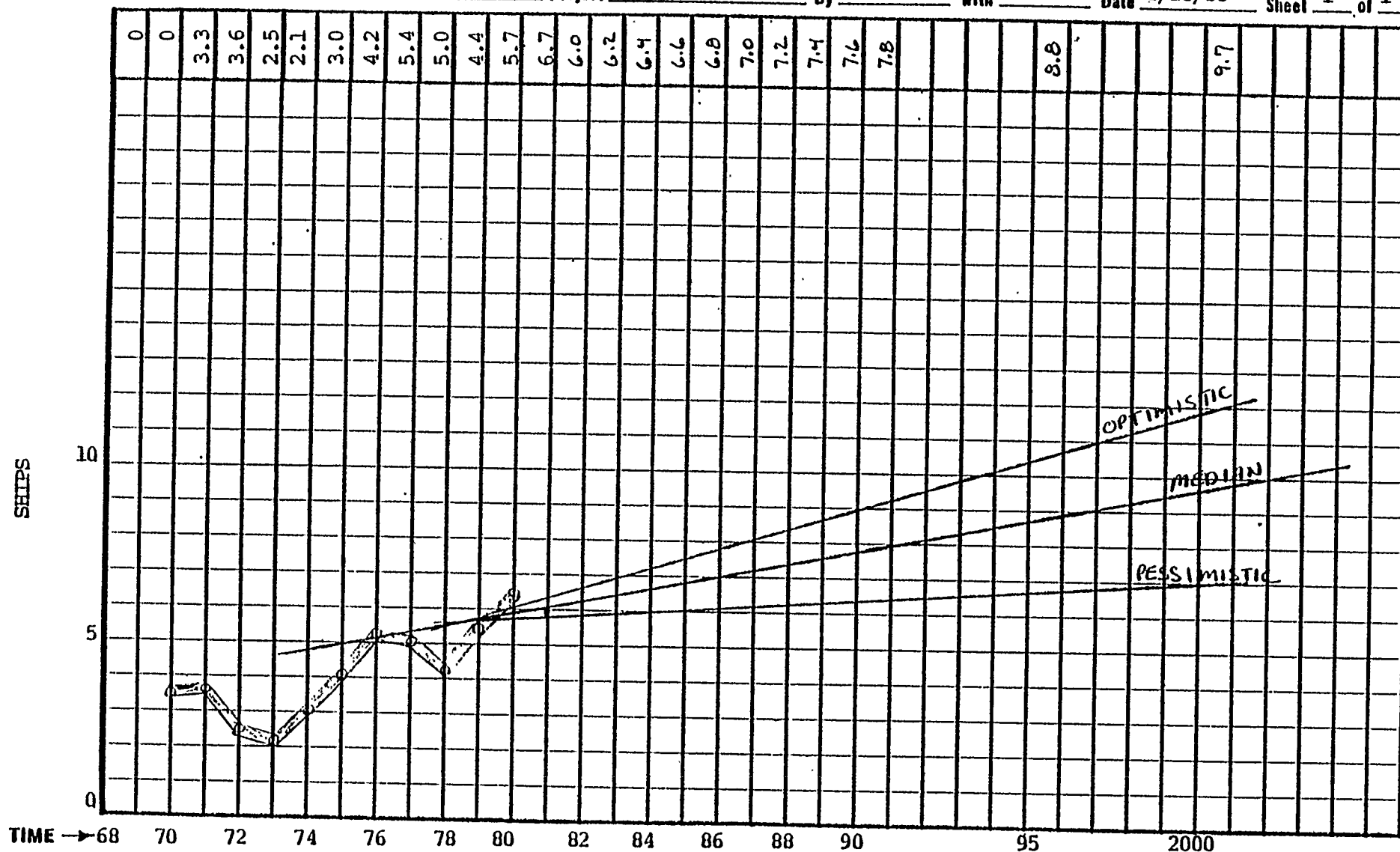
Plant NASSCOProject LREF

RvJ. Ruecker

With

Date 8/26/80

11



Notation References	a	Developed using equivalent
		ship ratio based on total
		manhours per ship using SCR
		as the base.

TITLE: Equivalent ships three year
rolling average.

SOURCE: Equivalent ship chart (a)

EXHIBIT-II

EQUIVALENT SHIPS

The concept of equivalent ships has been developed to provide a common indicator for projecting past production trends into the future, thereby predicting future facilities requirements. The equivalent ship *has* been developed on the following:

1. Total new construction direct labor hours (*cost groups* 1-9 minus 8 engineering) by type vessel.
2. San Clemente Class Tanker (SCT) used as base for equivalent ship indicator.
3. Total new construction direct labor hours per type vessel divided by SCT hours equals equivalent ship indicator for that type of vessel.

EXAMPLE :

<u>TYPE VESSEL</u>	<u>MANHOURS (CG 1-9 Minus 8)</u>	<u>EQUIVALENT SHIPS .</u>	
SCT .	1,399,296	1.00	Base
CT	1,013,476	.72	
SDT	2,453,425	1.75	
AOR	3,053,769	2.18	
AD	5,536,017	3.96	

September, 1980

YARD

EQUIVALENT SHIP RATIO BASED ON

TOTAL MANHOURS MINUS CG 8

<u>NAVY</u>	<u>MANHOURS</u> (1)	<u>EQUIVALENT SHIPS</u>	
LST Learning Curve Av.	901,626	0.64	
AFS	1,256,894.	0.90	
AOR	3,053,769	2.18	
AD 41/42	5,536,017	3.96	
T-ARC	2,044,351 (2)	1.46	
 <u>COMMERCIAL</u>			
OBO	1,342,571	.96	
CT	1,013,476	.72	
SCT	1,399,296	1.00	BASE
S DT	2,453,425	1.75	
CPC	1,421,860 (2)	1.02	
IPC	1,056,747 (2)	.76	
LPC	1,109,225 (2)	.79	

(1) From weekly budget recap report.

(2) Projection by the Estimating Department.

A.

October, 1980

EQUIVALENT SHIPS IN YEARS LAUNCHED

BASED ON MANHOURS (2) - SCT BASE 1.00 (1)

<u>YEAR</u>	<u>NAVY</u>	<u>COMM .</u>	<u>TOTAL</u>	<u>3-YEAR ROLLING AVERAGE</u>
1968	2.18	--	2.18	
1969	3.46	--	3.46	
1970	3.84	--	3 . 8 4	3.16
1971	3.20		3.20	3.50
1972	--	0.30 (3)	0.30	2.45
1973		2.64	2.64	2.05
1974	2.18	3.44	5.62	2.85
1 9 7 5		3.72	3.72	3.99
1976	--	6.44	6.44	5.26
1977		4.75	4.75	4.97
1978		1.75	1.75	4.31
1979	7.92	1.75	9.67	5.39

(1) Based on launch records of actual ships multiplied by equivalent ship ratio.

(2) N/C direct labor CG 1-9 minus 8.

(3) Estimated.

October, 1980

EQUIVALENT SHIPS PER YEAR

BASED ON NEW CONSTRUCTION LABOR (CG 1-9 MINUS 8)

<u>YEAR</u>	<u>TOTAL N/C DIRECT LABOR</u>	<u>EQUIV. SHIP DIRECT LABOR</u>	<u>EQUIV. SHIPS PER YEAR</u>
1974	6,548,293	1,399,296	4.7
1975	6,927,095	1,399,296	5.0
1976	8,630,625	1,399,296	6.2
1977	7,016,993	1,399,296	5.0
1 9 7 8	6,972,708	1,399,296	5.0
1979	8,554,902	1,399,296	6 . 1

October, 1980

1

NEW CONSTRUCTION DIRECT LABOR MANHOURS PER YEAR

	1979	1978	1977	1976	1975
415	13,912				
414	21,240				
413	1,548,523	62,462			
412	2,277,813	1,328,984	34,448	1,139	
411	1,972,667	2,436,515	805,414	13,774	
409	1,885,239	42,512	630	509	
408	835,052	1,636,257	5,037	594	
406		1,197,186	1,119,163	26,086	2,208
405	456	137,825	1,731,112	594,994	2,708
404			38,223	946,555	18,554
403				388,920	627,687
402				475	953,302
401		132,485	1,269,666	20,495	1,628
400		603	1,169,236	212,795	1,630
399		385	480,437	888,105	1,646
398		494	285,290	1,086,560	2,840
397				818,267	537,896
396				520,568	343,477
395				235,016	1,159,595
394				66,187	1,273,535
393				631,229	592,818
392					566,126
391					886
390					270
389			78,164	1,170,307	12,363
388			173	1,128,050	227,453
386					99,106
385					548
384					719
383					
382					
	8,554,902	6,972,708	7,016,993	8,630,625	6,927,095

(1) Not 100% of years **total** due to missing information.

October, 1980

NEW CONSTRUCTION DIRECT LABOR MANHOURS PER YEAR

	1974	1 9 7 3	1 9 7 2	1971
415			-	
414			-	
413			-	
412			-	
411			-	
409			-	
408			-	
406			-	
405			-	
404	16,65.1.		-	
403	16,625		-	
402	200,524		-	
401	369		-	
400	369		-	
399	566		-	
398	7 5 5		-	
397	6,866		-	
396	7,326		-	
395	33,692		-	
394	126,337		-	
393	1,698,489	131,233		
392	956,896	53,726		
391	1,269,254	198,375		
390	644,787	878,048		
389	3,661			
38a	3,619			
386	908,776	16,458	8,604	
385	499,666	408,735	8,738	
384	3,363	811,427	113,773	
383	149,093	1,119,576	57,876	3,398
382	609	513,562	835,726	5,322
	6,548,293	4,131,140 (1)	1,024,717 (1)	8,720 (1)

(1) Not 100% of years total due to missing information.

October, 1980

NEW CONSTRUCTION DIRECT LABOR MANHOURS

(COST GROUP 100 - 900 MINUS 800)

<u>HULL</u>	<u>YEAR</u>	<u>CUMULATIVE HOURS</u>	<u>HOURS PER YEAR</u>
415	1979	13,912	13,912
414	1979	21,240	21,240
413	1979	1,610,985	1,548,523
	1978	62,462	62,462
4 1 2	1979	3,639,384	2,277,813
	1978	1,361,571	1,325,984
	1977	35,587	34,448
	1976.	1,139	1,139
411	1979	5,228,370	1,972,667
	1978	3,255,703	2,436,515
	1977	819,188	805,414
	1976	13,774	13,744
409 -	1979	1,928,890	1,885,239
	1978	43.,651	42,512
	1977	1,139	630
	1976	509	509
408	1979	2,476,940	835,052
	1978	1,641,888	1,636,257
	1977	5,631	5,037
	1976	594	594
406	1979	2,344,643	
	1978	2,344,643	1,197,186
	1977	1,147,457	1,119,163
	1976	28,294	26,086
.	1975	2,208	2,208

Data from weekly budget recap report by hull and year.

October, 1980

NEW CONSTRUCTION DIRECT LABOR MANHOURS

(COST GROUP 100 - 900 MINUS 800)

<u>HULL</u>	<u>YEAR</u>	<u>CUMULATIVE HOURS</u>	<u>HOURS PER YEAR</u>
405	1979	2,467,095	456
	1978	2,466,639	137,825
	1977	2,328,814	1,731,112
	1976	597,702	594,994
	1975	2,708	2,708
404	1977	1,019,983	38,223
	1976	981,760	946,555
	1975	35,205	18,554
	1974	16,651	16,651
403	1976	1,033,232	388,920
	1975	644,312	627,687
	1974	16,625	16,625
402	1976	1,154,301	475
	1975	1,153,826	953,302
	1974	200,524	200,524
401	1978	1,424,643	132,485
1 9 7 7		1,292,158	1,269,666
	1976	22,492	20,495
	1975	1,997	1,628
	1974	369	369
400	1978	1,384,633	603
	1977	1,384,030	1,169,236
	1976	214,794	212,795
	1975	1,999	1,630
	1974	369	369
399	1978	1,371,139	385
	1977	1,370,754	480,437
	1976	890,317	888,105
	1975	2,212	1,646
	1974	566	566

October, 1980 .

NEW CONSTRUCTION DIRECT LABOR MANHOURS

(COST GROUP 100 - 900 MINUS 800)

<u>HULL</u>	<u>YEAR</u>	<u>CUMULATIVE HOURS</u>	<u>HOURS PER YEAR</u> .
398	1978	1,375,939	494
	1977	1,375,445	285,290
	1976	1,090,155	1,086,560
	1975	3,595 .	2,840
	1974	755	755
397	1976	1,363,029	818,267
	1975	544,762	537,896
	1974	6.866	6,866
396	1976	1,371,371	520,568
	1975	850,803	843,477
	1974	7,326	7,326
395	1976	1,428,303	235,016
	1975	1,193,287	1,159,595
	1974	33,692	33,692
394	1976	1,466,059	66,187
	1975	1,399,872	1,273,535
	1974	1.26,337	126,337
393	1976	3,053,769	631,229
	1975	2,422,540	592,818
	1974	1,829,722 .	1,698,489
	1973	131,233	131,233
392	1975	1,576,748	566,126
	1974	1,010,622	956,896
	1973	53,726	53,726
391	1975	1,468,515	886
	1974	1,467,629	1,269,254
	1973	198,375	198,375

October, 1980

NEW CONSTRUCTION DIRECT LABOR MANHOURS

(COST GROUP 100 - 900 MINUS 800)

<u>HULL</u> -	<u>YEAR</u>	<u>CUMULATIVE HOURS</u>	<u>HOURS PER YEAR</u>
390	1975	1,523,105	270
	1974	1,522,835	644,787
	1973	878,048	878,048
389	1977	1,264,495	78,164
	1976	1,186,331	1,170,307
	1975	16,024	12,363
	1974	3,661	3,661
388	1977 .	1,359,295	173
	1976 .	1,359,122	1,128,050
	1 9 7 5	231,072	227,453
	1 9 7 4	3,619	3,619
386	1975	1,032,944	99,106
	1974	933,838	908,776
	1973	25,062	16,458
	1972	8,604	8,604
385	1975	917,787	648
	1974	917,139	499,666
	1973	417,473	408,735
	1 9 7 2	8,738	8,738
384	1975	929,282	719
	1974	928,563	3,363
	1973	925,200	811,427
	1972	113,773	113,773
383	1974	1,329,943	149,093
	1973	1,180,850	1,119,576
	1972	61,274	5 7 , 8 7 6
	1971	3,39a	3,398
382	1974	1,355,219	609
	1973	1,254,610	513,562
	1972	841,048	835,726
	1971	5,322	5,322

October, 1980

SHIPS LAUNCHED BY YEAR

<u>YEAR</u>	<u>NAVY</u>	<u>COMMERCIAL</u>
1968	2-LST 1-AFS	
1969	4-LST 1-AFS	
1970	6-LST	
1971	5-LST	
1972		1-Barge
1973		2-OBO 1-CT
1974	1-AOR	2-CT 2-SCT
1975		3-SCT 1-CT
1976		5-SCT 2-CT
1977		3-SCT 1-SDT
1978		1-SDT
1979	2-AD	1-SDT

PROJECTIONS BASED ON LAUNCH SCHEDULE

1980	1-AD	1-SDT 2-CPC
1981	1-AD	1-CPC 1-IPC
1982	1-T-ARC	1_IPC 3-LPC

HISTORY KEY DATES

	HULL	WAYS	TYPE VESSEL	START OF CONSTRUCTION	KEEL	LAUNCH	DELIVERY
ESNO	361	2	LST	06-02-67(A)	12-16-67(A)	09-28-68(A)	11-06-69(A)
FLORIDA	362	3	LST	01-22-68(A)	02-22-68(A)	11-23-68(A)	01-19-70(A)
FREDERICK	363	1	LST	02-19-68(A)	04-13-68(A)	03-08-69(A)	03-11-70(A)
SCHENECTADY	364	4	LST	05-20-68(A)	08-02-68(A)	05-24-69(A)	05-05-70(A)
CAYUGA	365	2	LST	07-15-68(A)	09-28-68(A)	07-12-69(A)	06-30-70(A)
TUSCALOOSA	366	3	LST	09-13-68(A)	11-23-68(A)	09-06-69(A)	09-11-70(A)
SIGINAW	367	4	LST	02-03-69(A)	05-24-69(A)	02-07-70(A)	01-08-71(A)
SAN BERNARDINO	368	2	LST	06-02-69(A)	07-12-69(A)	03-28-70(A)	02-19-71(A)
BOULDER	369	3	LST	07-28-69(A)	09-06-69(A)	05-22-70(A)	04-22-71(A)
RACINE	370	1	LST	09-08-69(A)	12-13-69(A)	08-15-70(A)	06-17-71(A)
SPARTANBURG COUNTY	371	4	LST	11-17-69(A)	02-07-70(A)	11-07-70(A)	08-12-71(A)
FAIRFAX COUNTY	372	2	LST	01-30-70(A)	03-28-70(A)	12-19-70(A)	10-07-71(A)
LA MOURE COUNTY	373	3	LST	03-06-70(A)	05-22-70(A)	02-13-71(A)	12-09-71(A)
BARBOUR COUNTY	374	1	LST	05-11-70(A)	08-15-70(A)	05-15-71(A)	02-03-72(A)
HARLAN COUNTY	375	4	LST	08-03-70(A)	11-07-70(A)	07-24-71(A)	03-30-72(A)
BARNSTABLE COUNTY	376	2	LST	09-08-70(A)	12-19-70(A)	10-02-71(A)	05-18-72(A)
BRISTOL COUNTY	377	3	LST	12-14-70(A)	02-13-71(A)	12-04-71(A)	07-27-72(A)
SAN JOSE	387	1	AFS-7	11-22-68(A)	03-08-69(A)	12-13-69(A)	09-30-70(A)
REDWOOD COUNTY	360	1	BARGE	06-24-71(A)	07-01-71(A)	01-15-72(A)	04-04-72(A)
ULTRAMAR (ARIES)	382	4	OBO	11-24-71(A)	04-28-72(A)	02-17-73(A)	08-08-73(A)
ULTRASEA (ARIES)	383	4	OBO	11-06-72(A)	02-17-73(A)	10-20-73(A)	03-19-74(A)
CORONADO (MARGATE)	384	2	CT	09-07-72(A)	10-27-72(A)	06-30-73(A)	12-28-73(A)
CHERRY VALLEY (MARG)	385	2	CT	04-19-73(A)	06-30-73(A)	03-09-74(A)	07-10-74(A)
CHELSEA (MARGATE)	386	2	CT	12-10-73(A)	03-09-74(A)	10-19-74(A)	02-23-75(A)
LDEN DOLPHIN (AER)	390	3	SCT	03-28-73(A)	05-22-73(A)	01-19-74(A)	10-10-74(A)
GOLDEN ENDEAVOR	391	4	SCT	08-13-73(A)	10-23-73(A)	06-15-74(A)	12-12-74(A)
GOLDEN MONARCH	392	4	SCT	04-01-74(A)	06-15-74(A)	02-01-75(A)	06-25-75(A)
USS ROANOKE (USN)	393	3	ACR-7	10-06-73(A)	01-19-74(A)	12-07-74(A)	10-14-76(A)
NORTH	394	3	SCT	09-09-74(A)	12-07-74(A)	07-19-75(A)	02-19-76(A)
BEAVER STATE	395	4	SCT	10-21-74(A)	02-01-75(A)	10-11-75(A)	04-14-76(A)
ROSE CITY	396	BD	SCT	03-31-75(A)	05-05-75(A)	02-12-76(A)	07-23-76(A)
AMERICAN HERITAGE	397	3	SCT	05-27-75(A)	07-19-75(A)	04-10-76(A)	11-01-76(A)
OVERSEAS CHICAGO	398	3	SCT	03-08-76(A)	04-15-76(A)	11-16-76(A)	06-30-77(A)
OVERSEAS OHIO	399	4	SCT	04-26-76(A)	06-30-76(A)	01-26-77(A)	10-20-77(A)
OVERSEAS NEW YORK	400	3	SCT	09-03-76(A)	11-22-76(A)	06-22-77(A)	12-08-77(A)
OVERSEAS WASHINGTON	401	4	SCT	11-29-76(A)	02-02-77(A)	08-31-77(A)	03-15-78(A)
NORMACSTAR	402	2	CT	07-29-74(A)	10-23-74(A)	05-31-75(A)	12-10-75(A)
MORMACSUN	403	2	CT	04-21-75(A)	05-31-75(A)	01-17-76(A)	06-23-76(A)
MORMACSKY	404	2	CT	11-10-75(A)	01-17-76(A)	08-21-76(A)	02-01-77(A)
CHESTNUT HILL	408	4	SCT	07-07-75(A)	10-15-75(A)	06-22-76(A)	12-01-76(A)
KITTANNING	389	BD	SCT	12-02-75(A)	02-20-76(A)	09-17-76(A)	03-01-77(A)
B.T. ALASKA	405	BD	SDT	07-26-76(A)	09-21-76(A)	07-21-77(A)	03-14-78(A)
B.T. SAN DIEGO	406	BD	SDT	05-09-77(A)	07-25-77(A)	05-06-78(A)	10-25-78(A)
ARCO ALASKA	408	BD	SDT	01-03-78(A)	05-09-78(A)	02-24-79(A)	12-04-79(A)
ARCO CALIFORNIA	409	BD	SDT	11-06-78(A)	02-28-79(A)	01-05-80(A)	07-15-80(A)
YELLOWSTONE (USN)	411	2	AD-41	01-10-77(A)	06-27-77(A)	01-27-79(A)	05-31-80(A)
ACADIA (USN)	412	3	AD-42	07-10-77(A)	02-14-78(A)	07-28-79(A)	03-03-81
FE COD (USN)	413	2	AD-43	05-01-78(A)	01-27-79(A)	08-02-80(A)	10-30-81
(USN)	414						

AFS Combat Store Ship
LST Landing Ship Tank
OBO Ore Bulk Oil Carrier
CT Coronado Class Tanker
SCT San Clemente Class Tanker
SDT San Diego Class Tanker
BD Buoy Tender

NOTE: Revised to agree with Key Dates from Serial No. 30-2

Prepared By: A.J. Nadeau
Date: August 30, 1988

* UNNAMED SHIPS

HISTORY KEY DATES

	<u>HULL</u>	<u>WAYS</u>	<u>TYPE VESSEL</u>	<u>START OF CONSTRUCTION</u>	<u>KEEL</u>	<u>LAUNCH</u>	<u>DELIVERY</u>
*	414	7	AD-44	08-03-79(A)	08-02-80(A)	12-19-81	02-15-83
<u>BLUE RIDGE</u>	<u>415</u>	<u>BD</u>	CPC	11-01-79 (A)	<u>03-03-80(A)</u>	<u>11-01-80</u>	04-09-81
<u>EAST RANGE</u>	<u>416</u>	<u>3</u>	CPC	02-18-80(A)	<u>06-02-80 (AI)</u>	<u>12-20-80</u>	05-28-81
<u>TERRA MADRE</u>	<u>417</u>	<u>4</u>	CPC	06-05-80 (A)	<u>09-02-80</u>	<u>05-28-81</u>	08-27-81
*	418	3	T -ARC -7	09.15.80	<u>02-16-81</u>	<u>02-13-82</u>	02-15-83
*	419	BD	IPC	11.03.80	<u>03-02-81</u>	<u>10-03-81</u>	03-01-82
*	420	2	La Jolla	11-30-81	<u>03-29-82</u>	10-36-82	04-01-83
*	424	4	LPC	<u>05-04-81</u>	08-03-81	03-06-82	09-02-82
*	425	3D	LPC	<u>07-20-81</u>	10-19-81	05-22-82	10-26-82
*	426	4	LPC	<u>11-23-81</u>	03-08-82	09_25_82	03-03-83

AD	Destroyer Tender
CPC	Carlsbad Product Carrier
T-ARC-7	Cable Repair Ship
IPC	Ingram Product Carrier
LPC	La Jolla Product Carrier

SHIP MIX

(NAVY VS COMMERCIAL)

DATA

DATA RECORD Plant NASSCO Project LRFP By J. Ruecker With _____ Date 8/20/80 Sheet 1 of 1

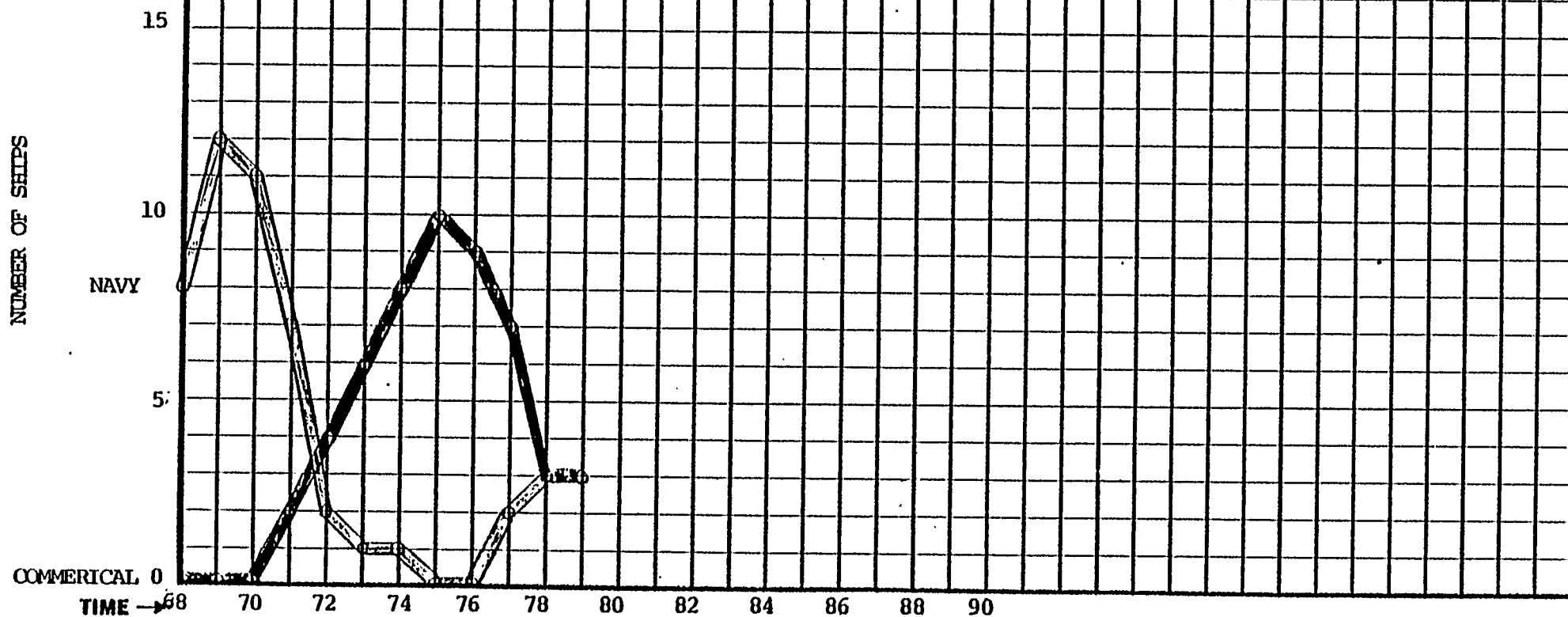
Project LRFP

By J. Ruecker With

Date 8/20/80

Sheet 1 of 1

NAVY	8	12	11	7	2	1	1	-	-	2	3	3
COMMERICAL	-	-	-	2	4	6	8	10	9	7	3	3

COMMERICAL

Notation
References

a		e		TITLE: Ships under construction (by steel
b		f		across platens)
c		g		SOURCE: Status of steel report-Sub Ass'y
d		h		yearly summary report.

RMA-350

RICHARD MUTH & ASSOCIATES

KANSAS CITY, MO.

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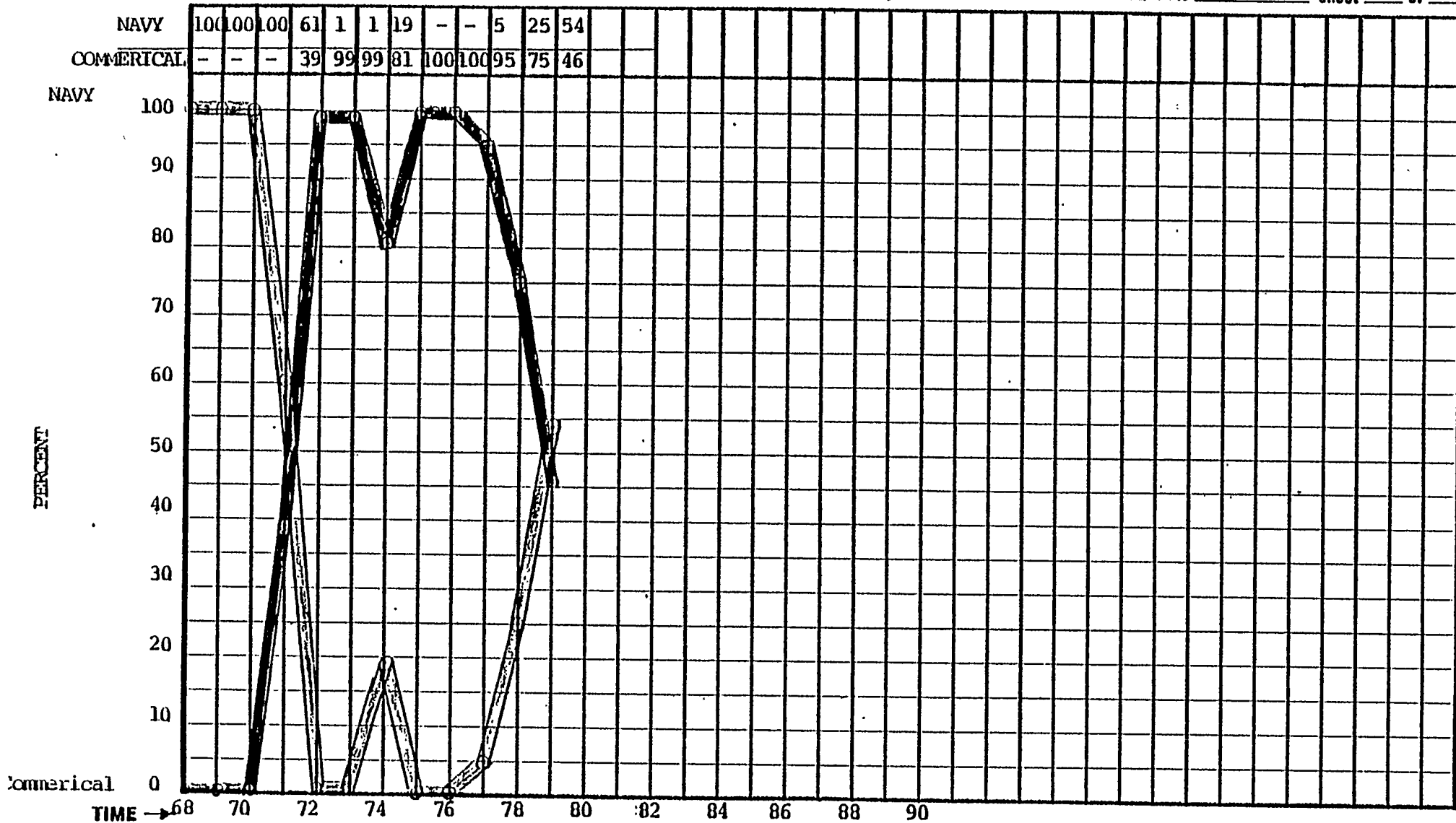
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With _____

Date 8/20/80

Sheet 1 of 1



Notation References	a		e		<p>TITLE: Percent of Ship Mix By Navy vs. Commerical (by steel across platen)</p> <p>SOURCE: Status of Steel-Sub Ass'y</p>
	b		f		
	c		g		
	d				

PERCENT OF SHIP MIX BACKUP DATA

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
dry ships under construction	8	12	11	7	2	1	1	-	-	2	3	3	-
steel gross tonnage	13,019	17,694	14,765	7,246	9	105	8,538	-	-	3,491	10,075	27,566	-
commercial ships under construction	-	-	-	2	4	6	8	10	9	7	3	3	-
steel gross tonnage	-	-	-	4,545	18,785	42,124	35,711	62,051	77,788	61,335	30,756	23,490	-
TOTAL SHIPS	8	12	11	9	6	7	9	10	9	9	6	6	-
TOTAL TGS	13,019	17,694	14,765	11,791	18,794	42,229	44,249	62,051	77,788	64,826	40,831	51,056	-

HISTORICAL LAUNCH

DATA

DATA RECORD

Plant NASSCO

Project LRFP

By _____

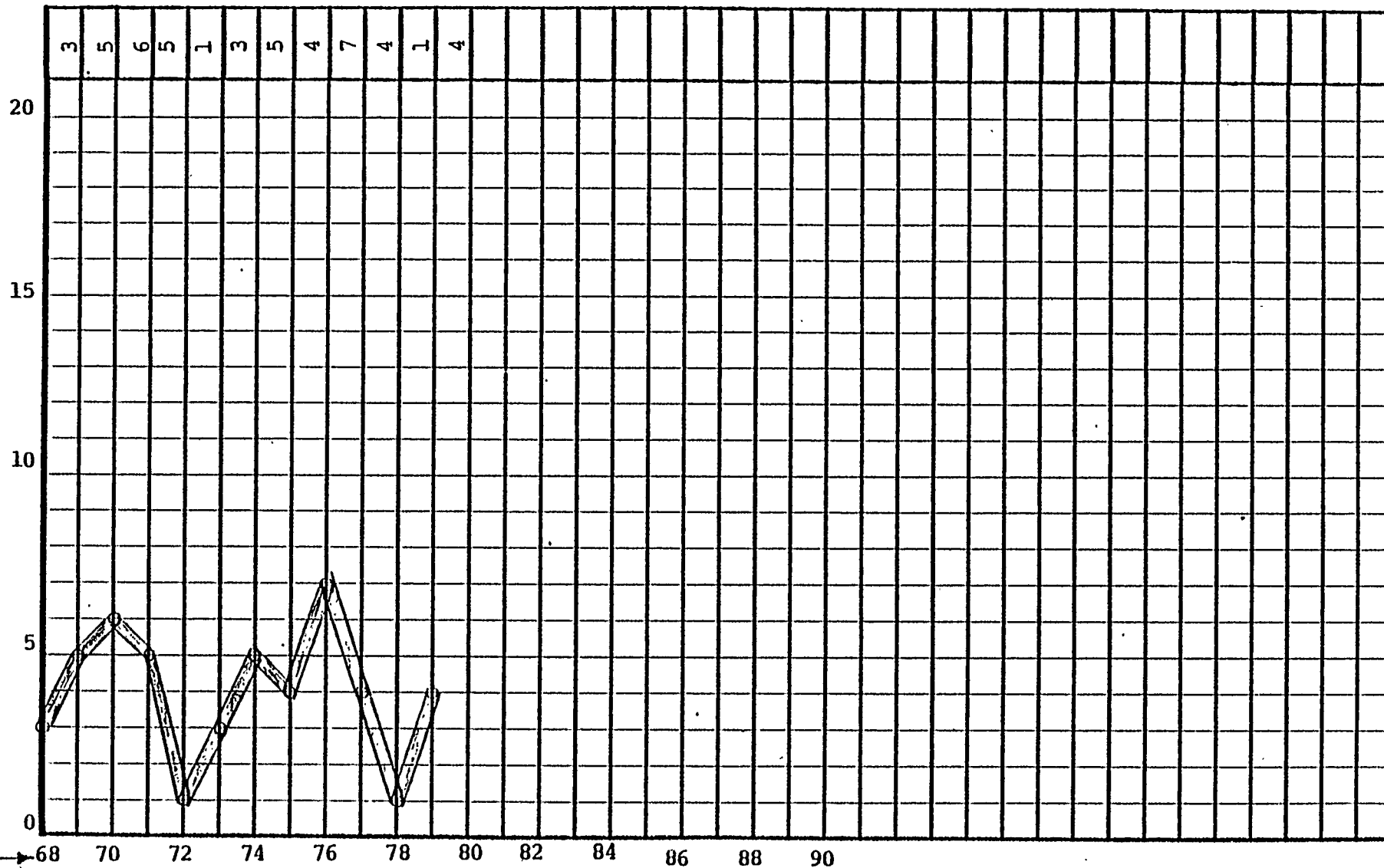
With J. Ruecker

Date 8/20/80

Sheet 1 of 1

SHIPS

TIME →



Notation
References

a		e		TITLE: Ships launched
b		f		(Navy & Commercial)
c		g		SOURCE: Key date
d		h		Planning & Production Control Dept.

DATA RECORD

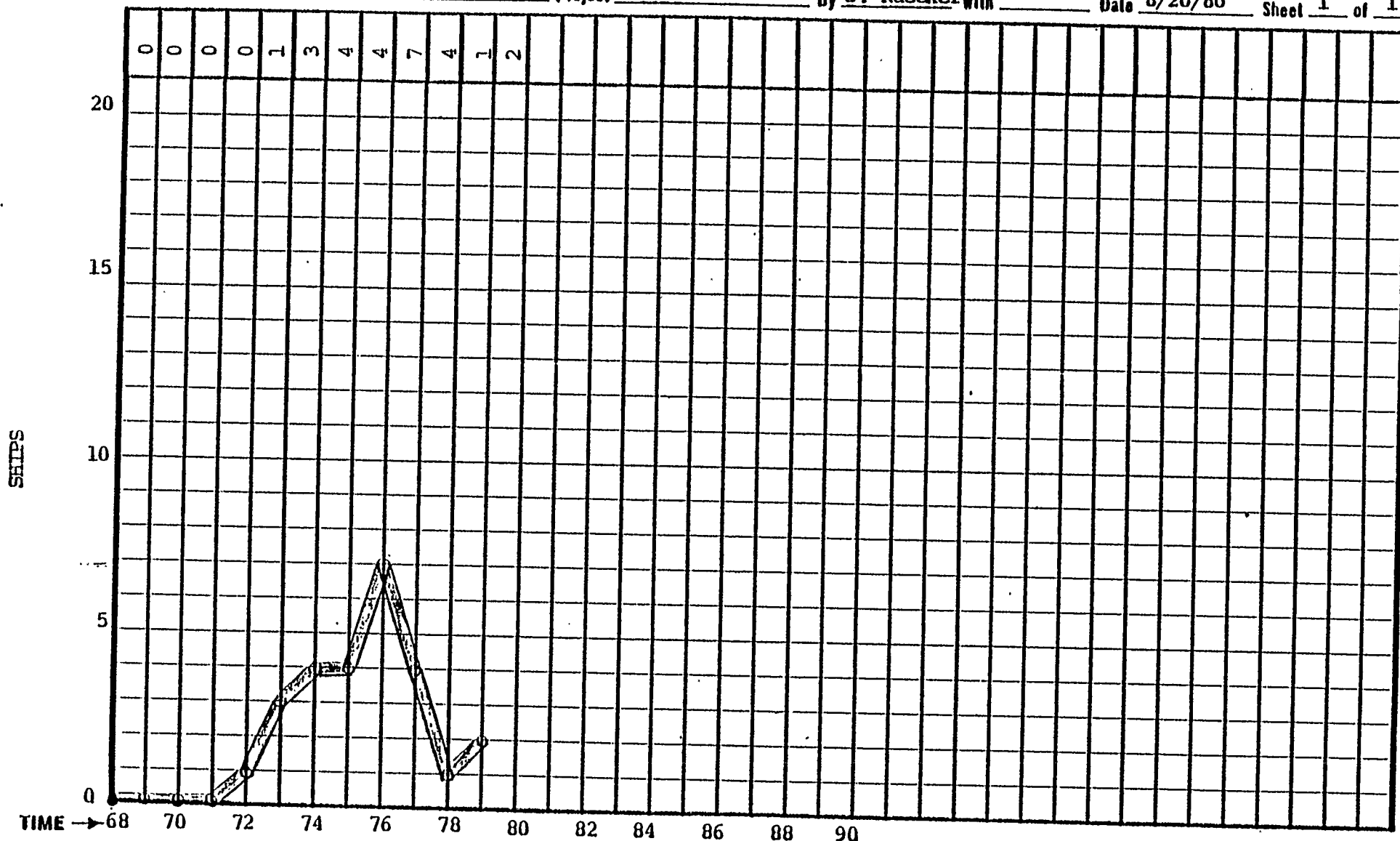
Plant NASSCO

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By J. Ruecker With _____

Date 8/20/80

Sheet 1 of 1



Notation References	a		TITLE: Commercial Ships Launched
	b		
	c		
	d		
	e		SOURCE Key dates
	f		
	g		
	h		

DATA RECORD

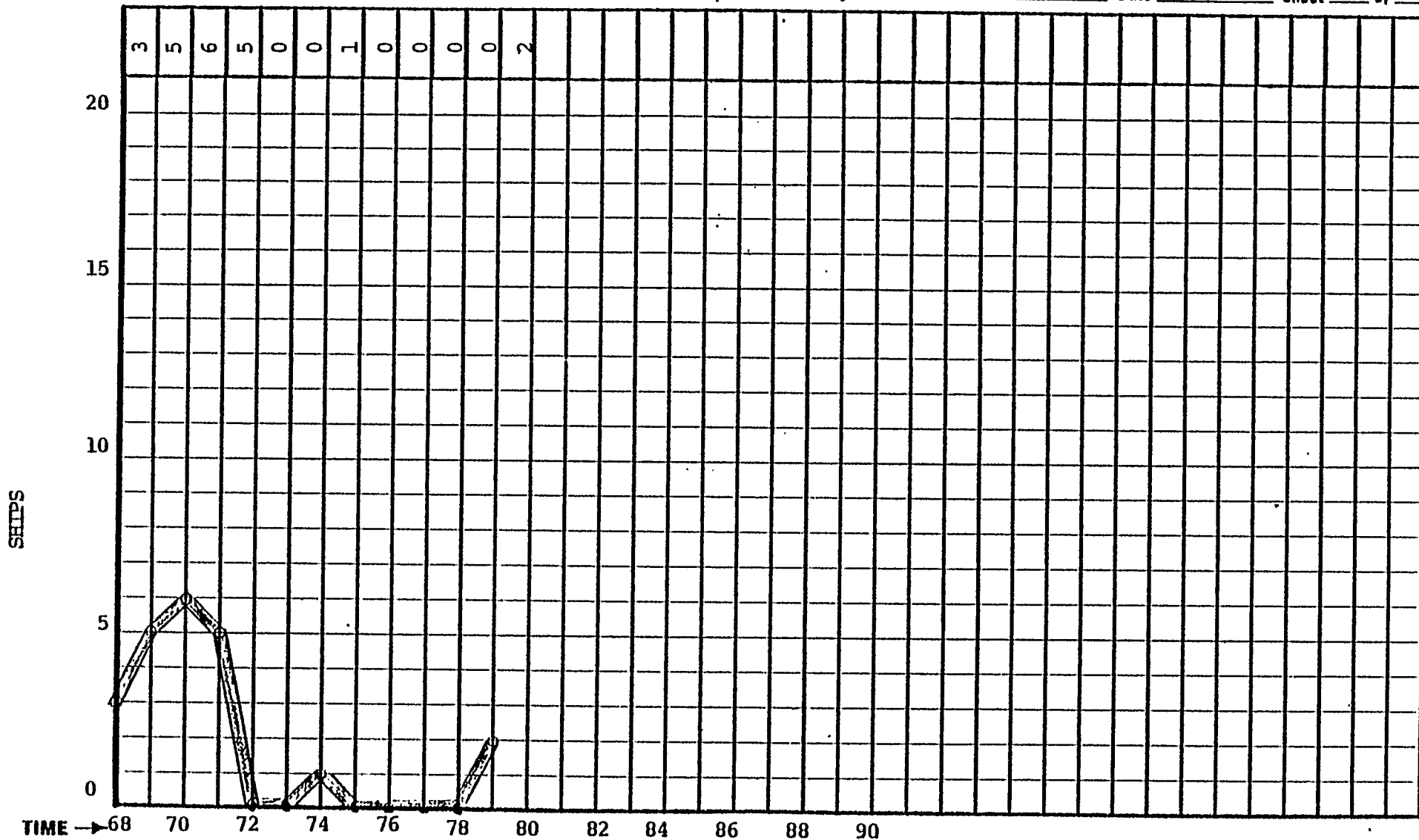
Plant NASSCO

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Date 8/20/80

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Notation
References

a	
b	
c	
d	

e	
f	
g	
h	

TITLE: Navy Ships Launched

SOURCE: Key dates

Planning & Production Control Dept.

DATA RECORD

Plant NASSCO

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Date 8/20/80

Sheet 1 of 1

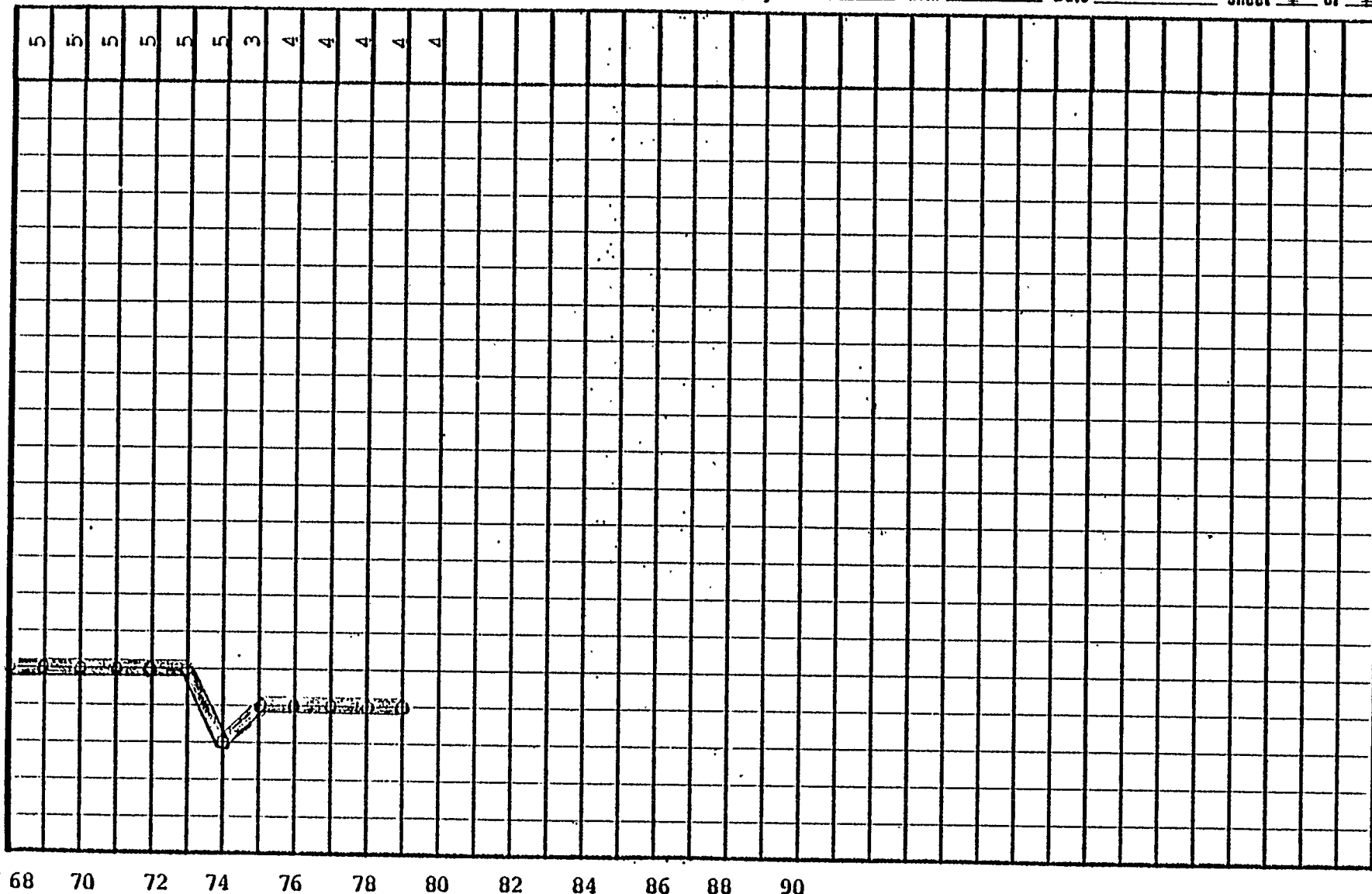
BUILDING POSITIONS

10

5

0

TIME →



68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

a	
b	
c	
d	

e	
f	
g	
h	

TITLE: Building positions

SOURCE: Standard Form 17

DATA RECORD

Plant NASSCO

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By J. Ruecker With _____

Date 8/20/80

Sheet 1 of 1

SHIPS

20

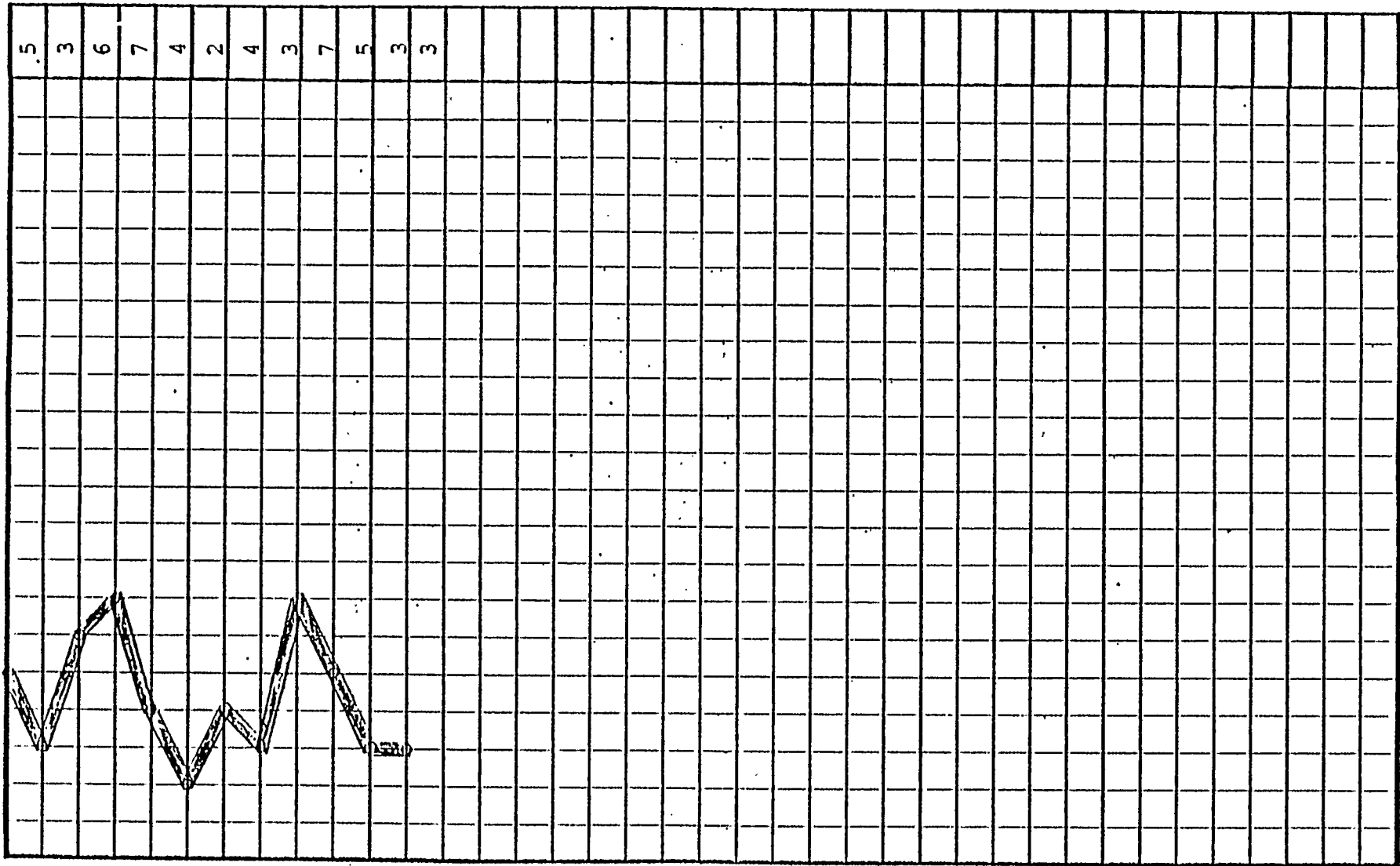
15

10

5

0

TIME →



a		e		TITLE: Ships delivered SOURCE: Key dates Planning & Production Control Dept.
b		f		
c		g		
d		h		

Notation
References

HISTORICAL EMPLOYMENT

DATA

DATA RECORD

Plant NASSCO

Project LRFP

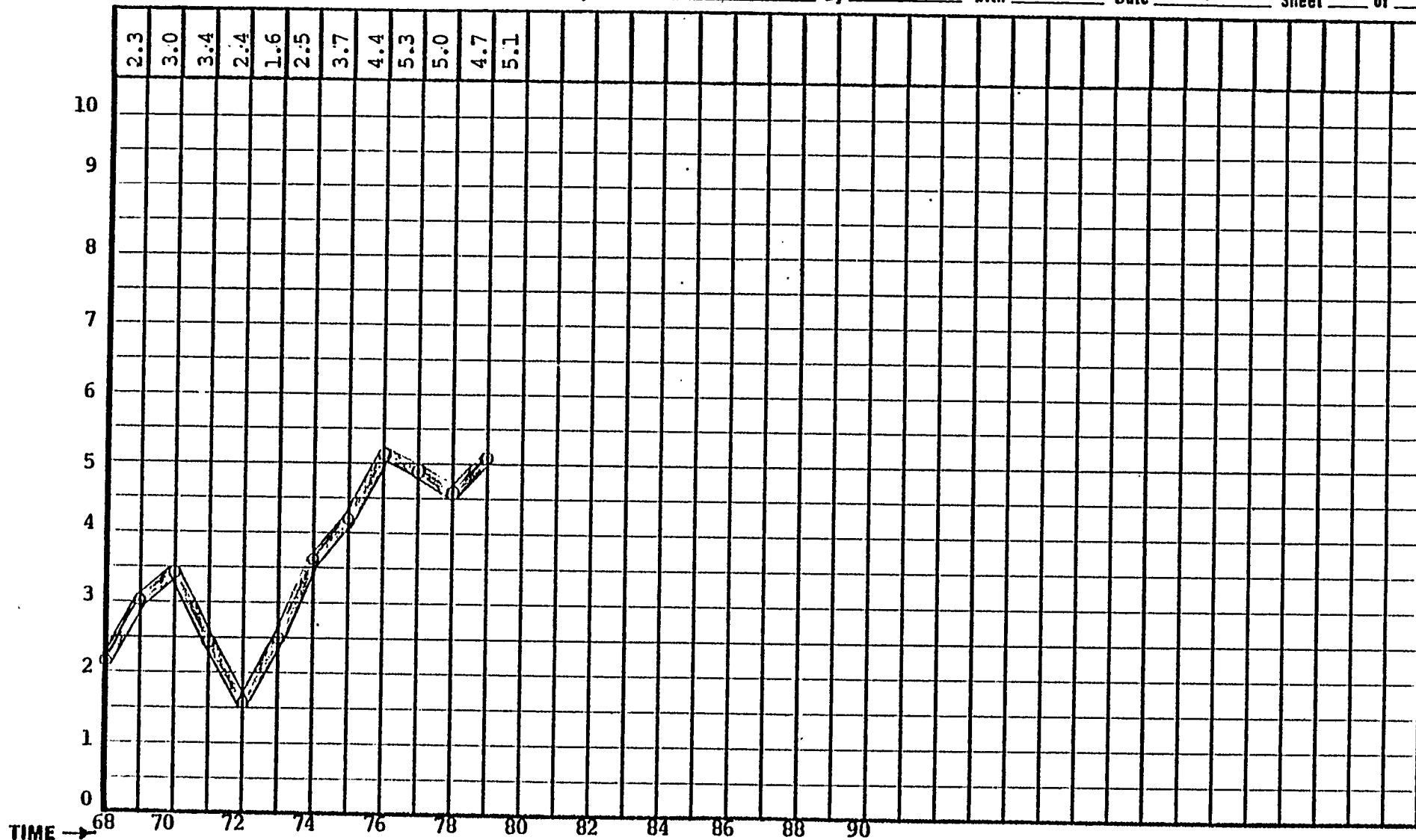
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Date 8/20/80

Sheet 1 of 1

PRODUCTION EMPLOYEE'S (000)



TIME →

Notation
References

a		e		TITLE: Production Employee's
b		f		(Yearly Averages)
c		g		SOURCE: Monthly Labor Force Report
d		h		Industrial Relations

RMA-350

RICHARD MUTHEN & ASSOCIATES

KANSAS CITY, MO.

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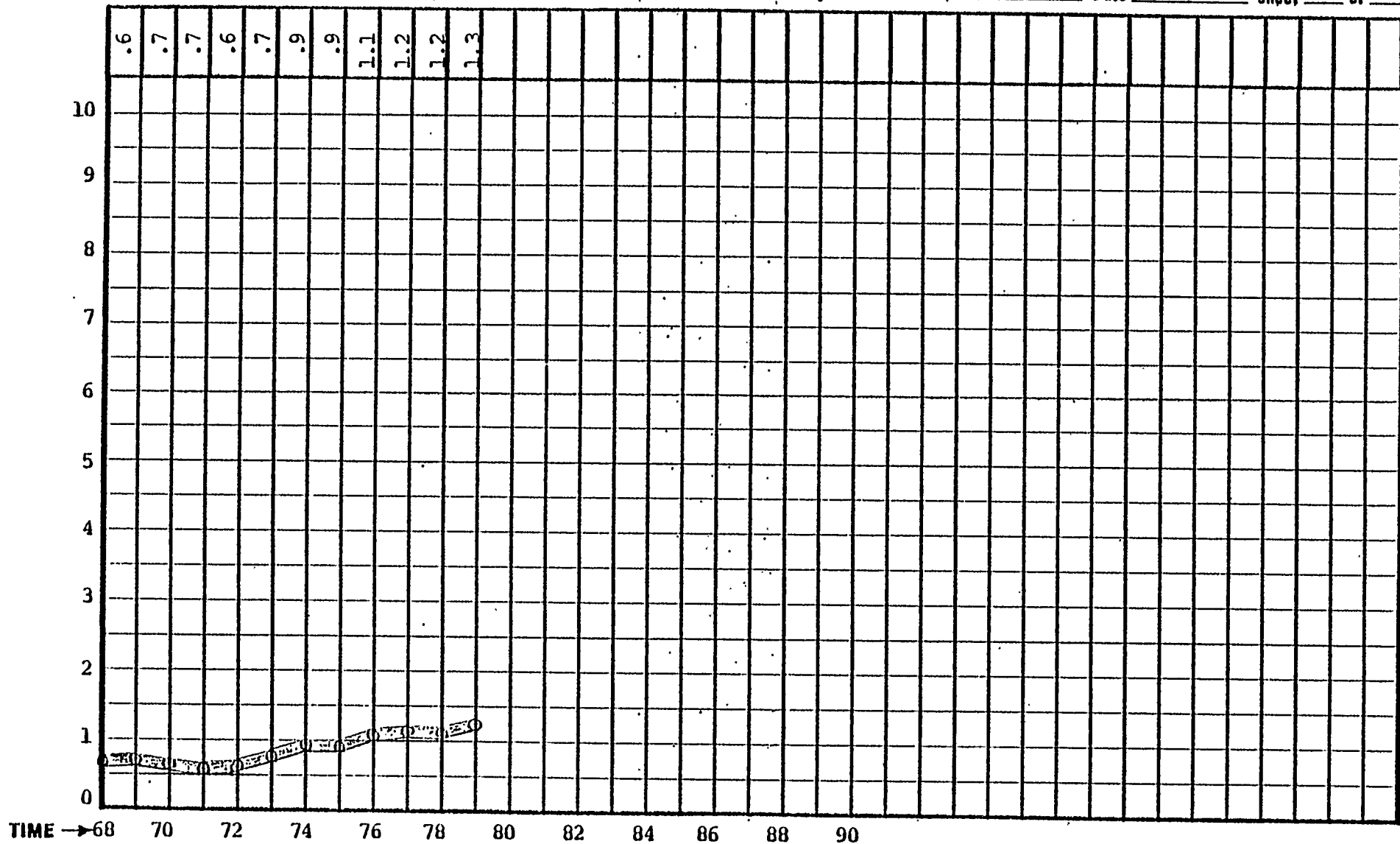
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By J. RUECKER With _____

Date 8/20/80

Sheet 1 of 1

NON-PRODUCTION EMPLOYEES (000)



TIME → 68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

a		•		TITLE: Non-Production Employee's
b		f		(Yearly averages)
c		g		SOURCE: Monthly Labor Force Report
d				

September 1980

AVERAGE YEARLY EMPLOYMENT

YEAR	PRODUCTION	NON-PRODUCTION	TOTAL
1968	2,260	637	2,897
1969	3,032	668	3,700
1970	3,445	653	4,098
1971	2,424	559	2,983
1972	1,609	566	2,175
1973	2,544	722	3,266
1974	3,734	934	4,668
1975	4,394	900	5,294
1976	5,270	1,101	6,371
1977	4,951	1,174	6,125
1978	4,682	1,168	5,850
1979	5,079	1,297	6,376

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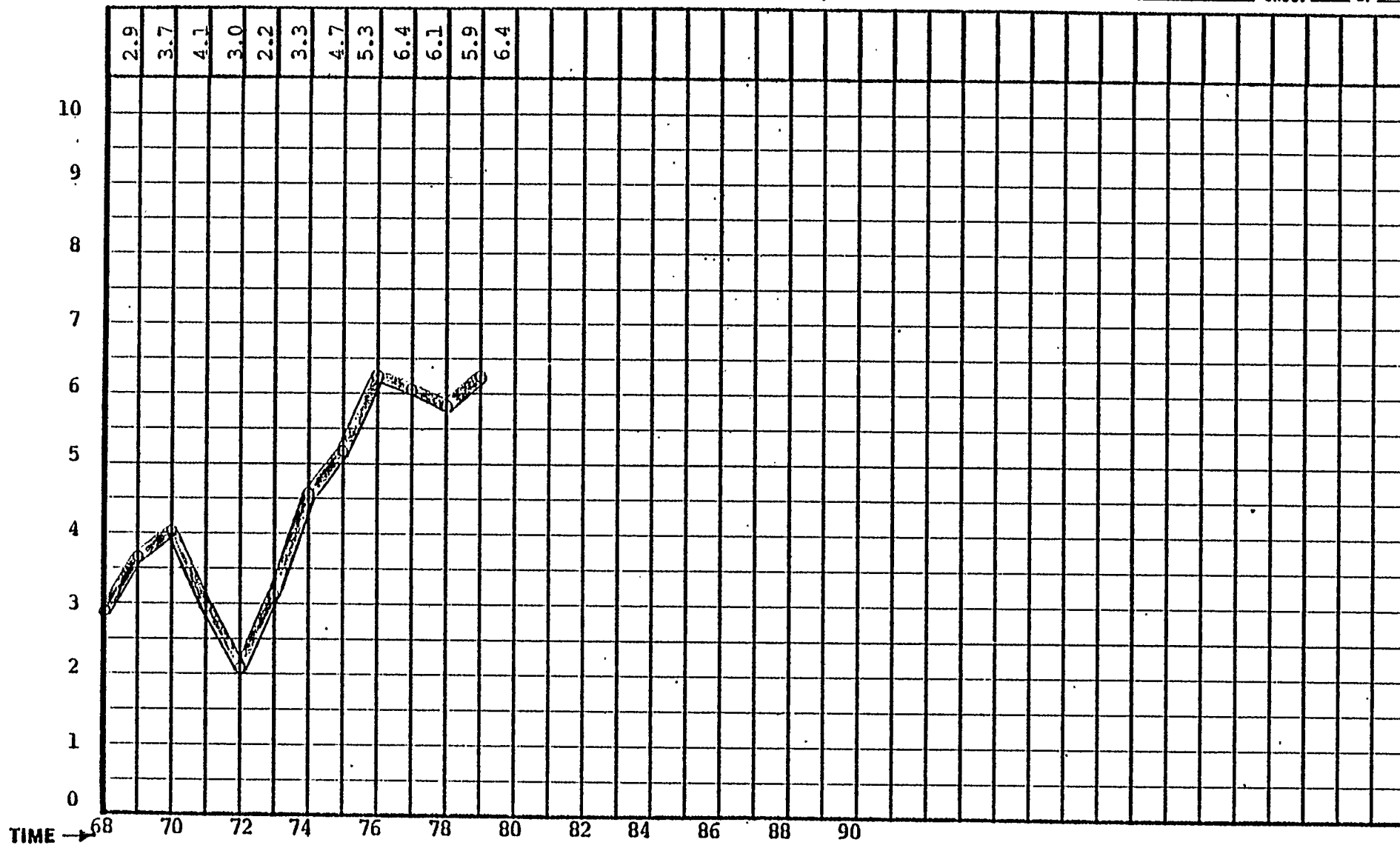
By J. RUECKER

With _____

Date 8/20/80

Sheet 1 of 1

EMPLOYEES (000)



TIME →

Notation
References

a		e	
b		f	
c		g	
d		h	

TITLE: Total Employment

(Yearly averages)

SOURCE: Monthly Labor Force Report

Industrial Relations

DATA RECORD

Plant NASSCO

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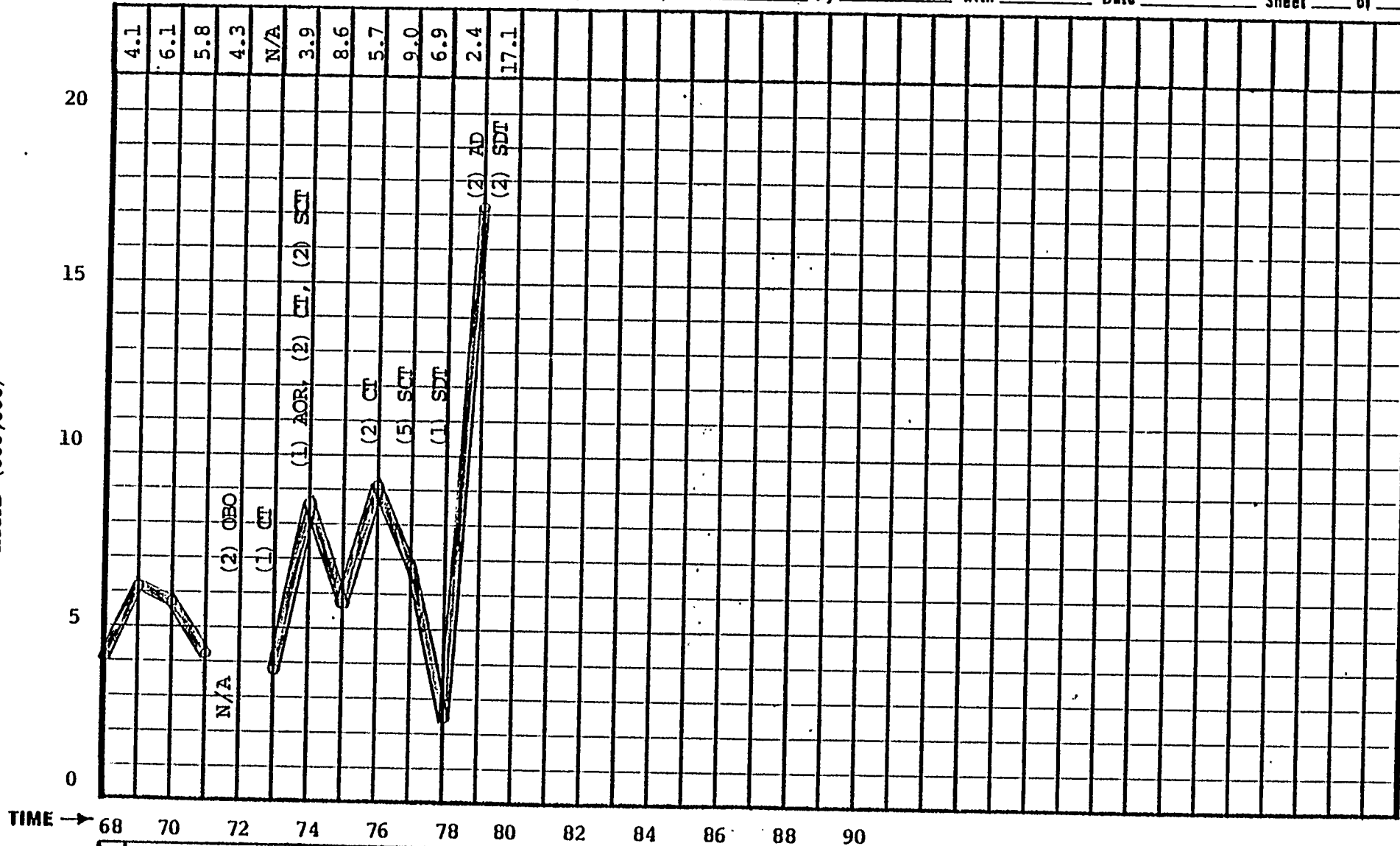
By J. Ruecker

With _____

Date 8/20/80

Sheet 1 of 1

HOURS (000,000)



TIME →

Notation
References

a	Data by hull and launch date
b	
c	
d	

e
f
g
h

TITLE: Total manhours

(Navy & commercial)

SOURCE: Final weekly budget recap for
each hull.

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RICHARD MUTH & ASSOCIATES

KANSAS CITY, MO.

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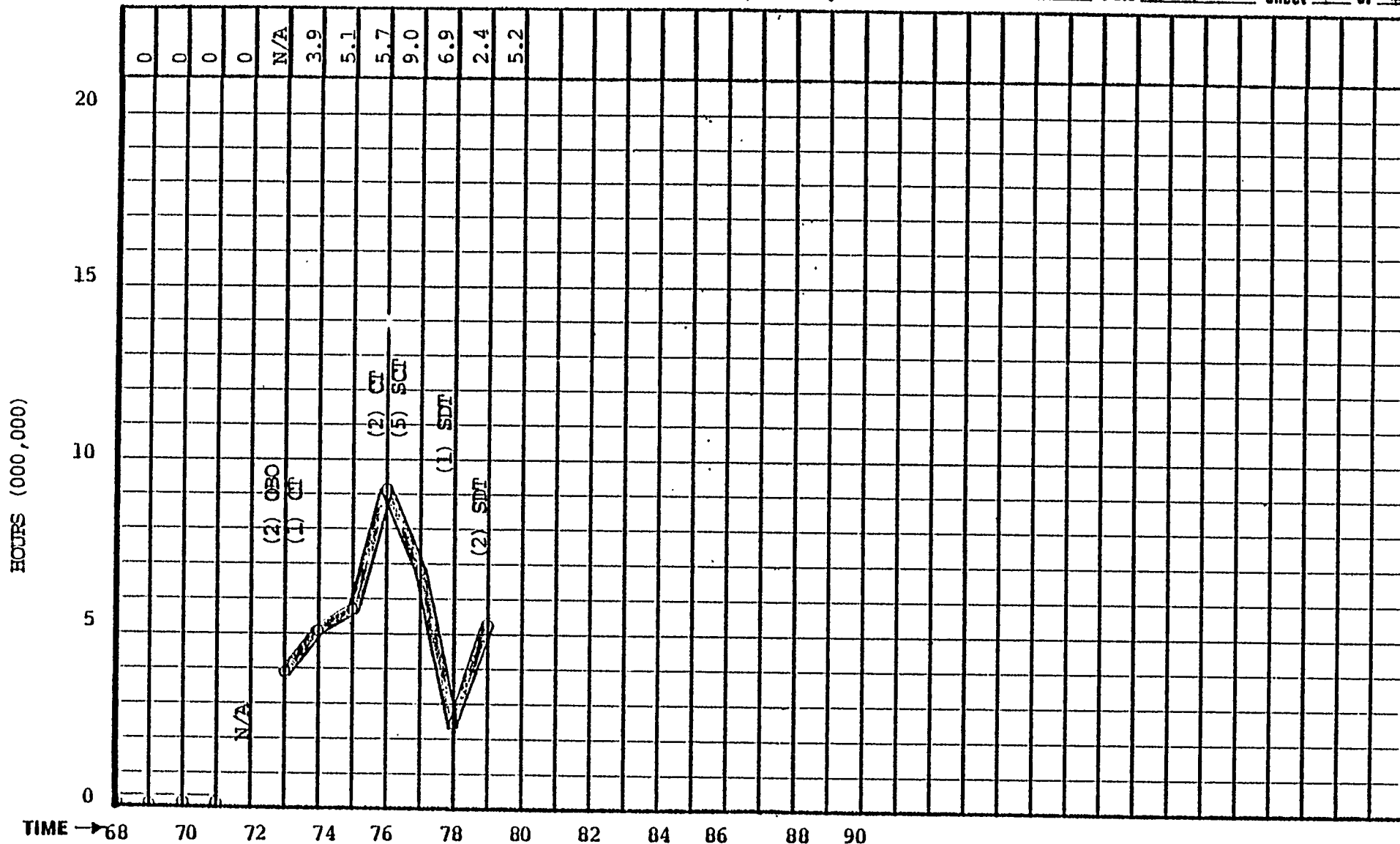
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With _____

Date 8/20/80

Sheet 1 of 1



TIME → 68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

a	Data by hull and launch date.
b	
c	
d	

e	
f	
g	
h	

TITLE: Total commercial manhours

SOURCE: Final weekly budget recap for

DATA RECORD

Plant NASSCO

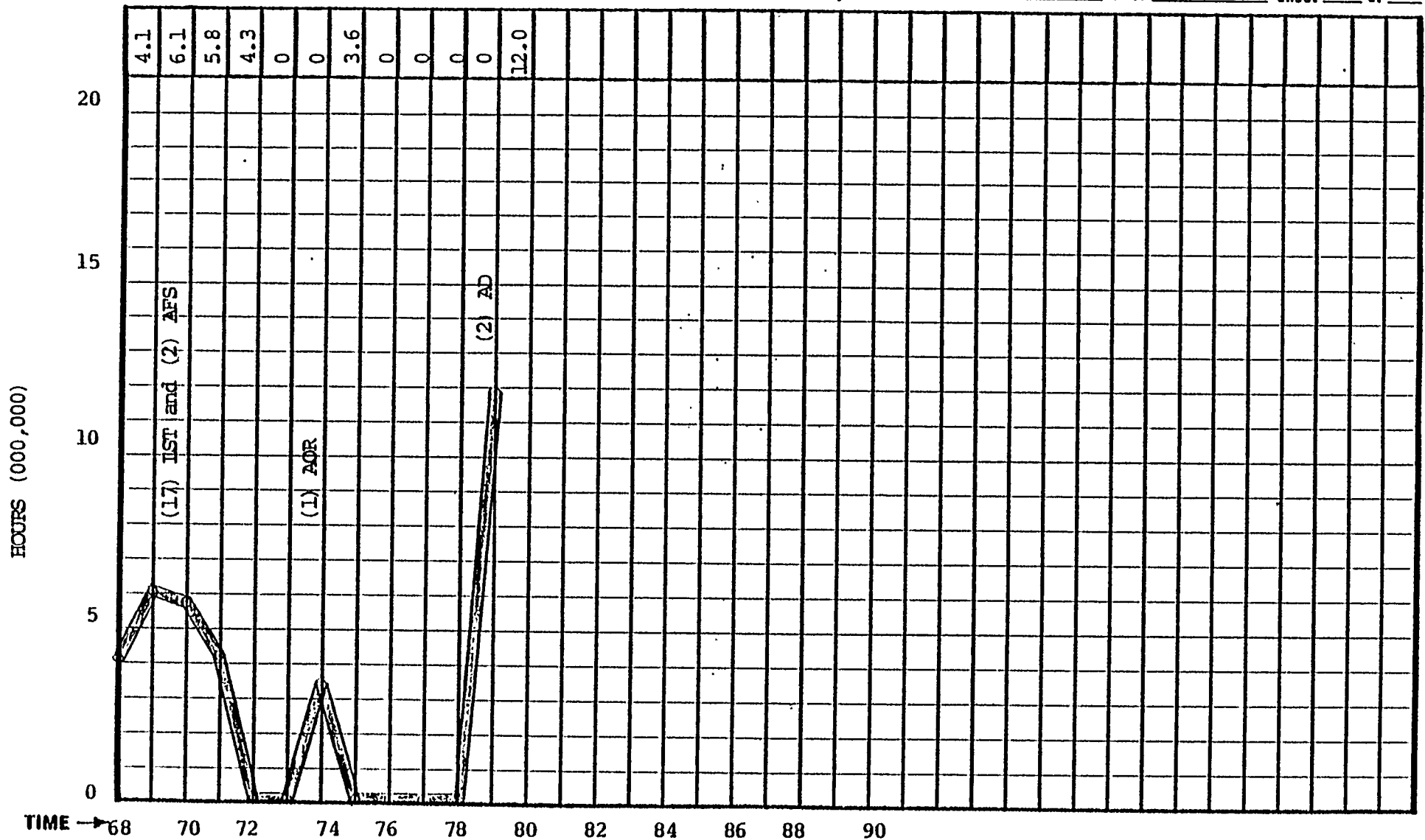
Project LRFP

By J. Ruecker

With _____

Date 8/20/80

Sheet 1 of 1



TIME → 68 70 72 74 76 78 80 82 84 86 88 90

Notation References	a	Data by hull and launch date.	TITLE: Total Navy manhours SOURCE: Final weekly budget recap for each hull.
	b		
	c		
	d		

DATA RECORD

Plant NASSCO

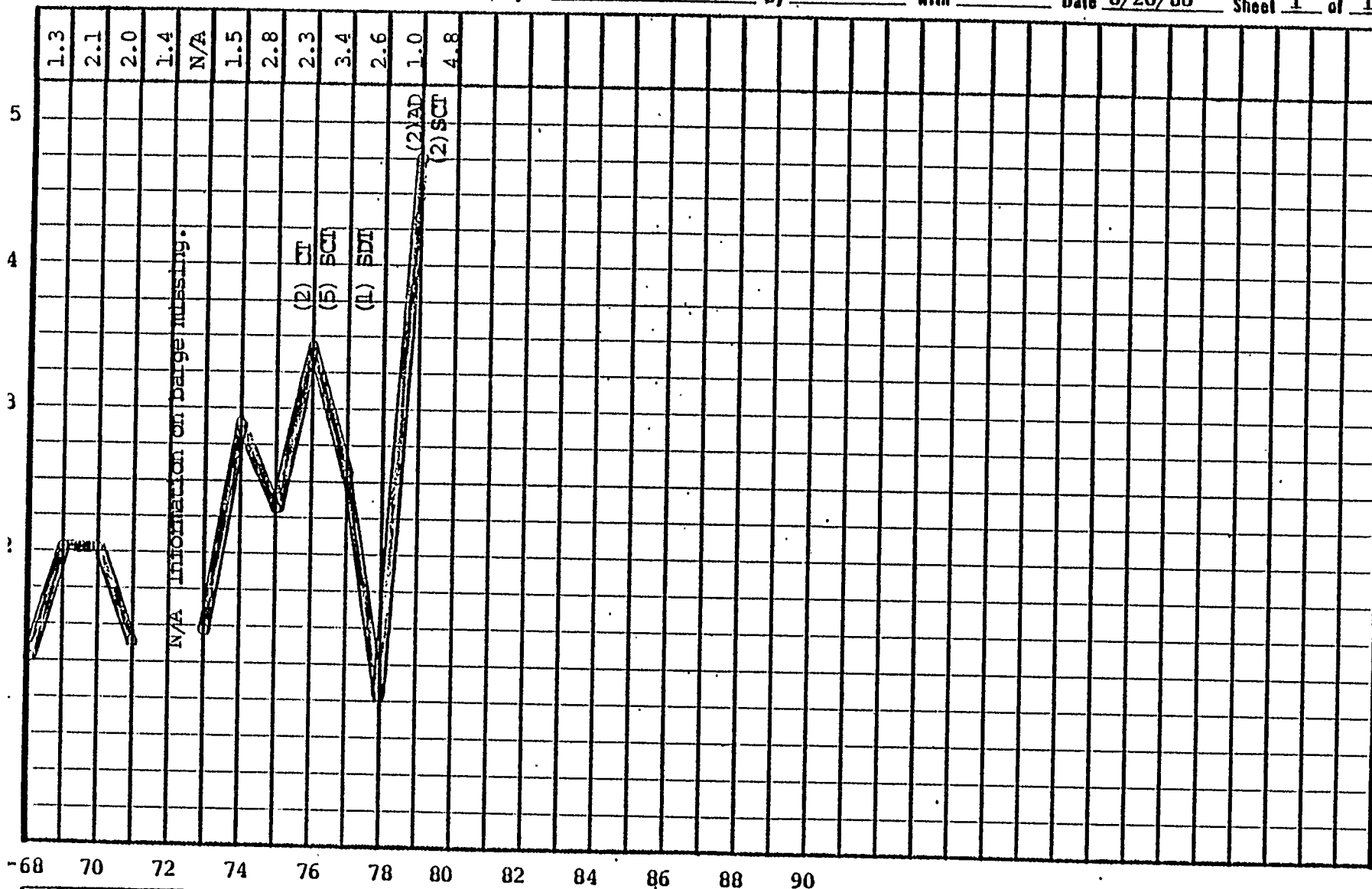
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With _____

Date 8/20/80

Sheet 1 of 1



-68 70 72 74 76 78 80 82 84 86 88 90

a	Data by hull & launch date
b	OG100 covers complete hull
c	& steel superstructure.
d	

e	
f	
g	
h	

TITLE: Cost group 100 manhours for commercial & Navy ships.
SOURCE: Final weekly budget recap for

DATA RECORD

Plant NASSCO

Project LRFP

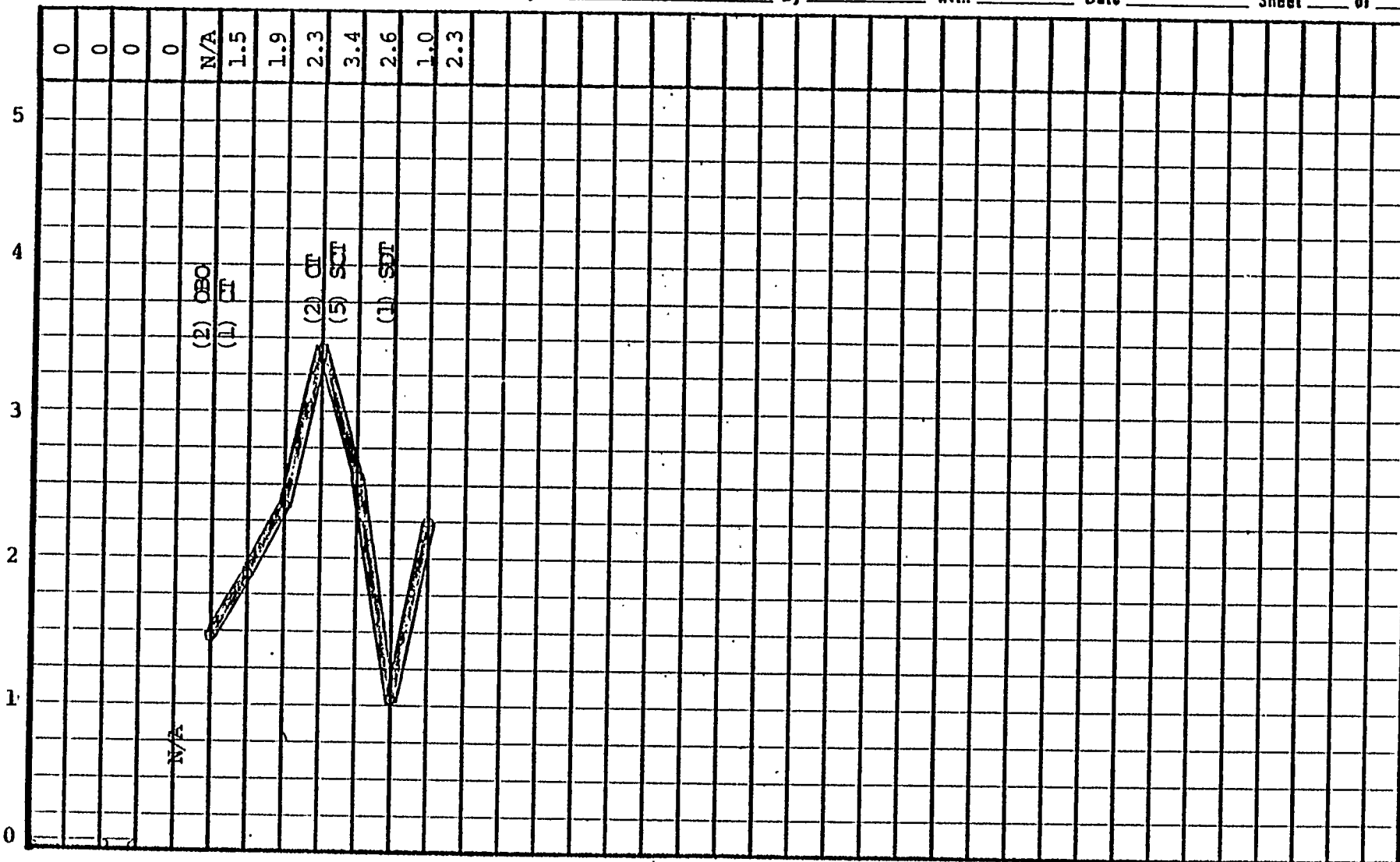
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Sheet 1 of 1

HOURS (000,000)

TIME → 68 70 72 74 76 78 80 82 84 86 88 90



Notation
References

a	Data by hull and launch date
b	CG100 covers complete hull and steel superstructure.

TITLE: Cost group 100 manhours for commercial ships.

SOURCE: Final weekly budget recap for each hull.

DATA RECORD

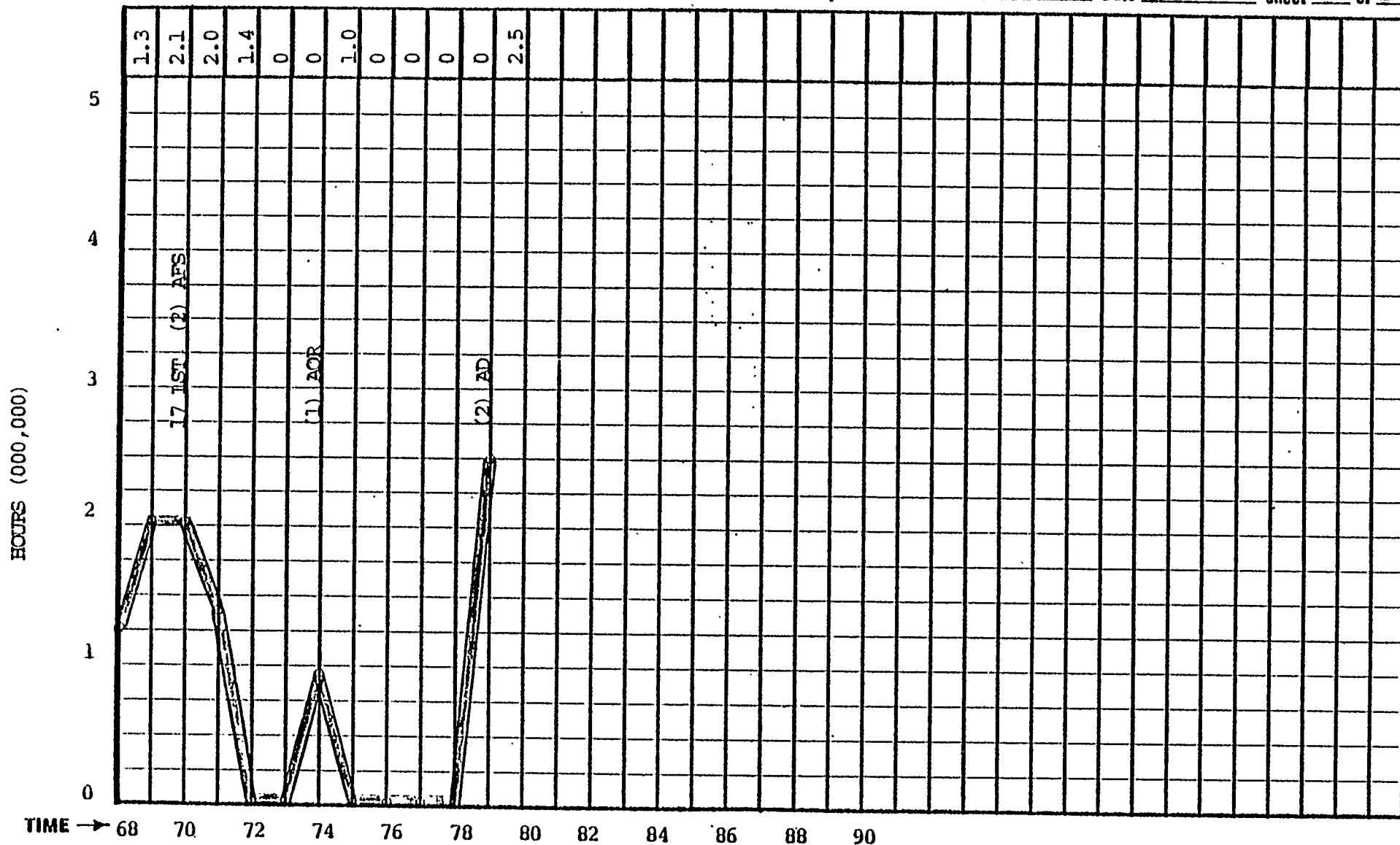
Plant NASSCO

Project LRFP

By J. Ruecker With _____

Date 8/20/80

Sheet 1 of 1



TIME -> 68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

- a Data by hull and launch date
- b CG100 covers complete hull & steel superstructure

TITLE: Cost group 100 manhours for Navy ships.

SOURCE: Final weekly budget recap for each hull

HISTORICAL ELECTRICAL
USAGE DATA

DATA RECORD

Plant NASSCO

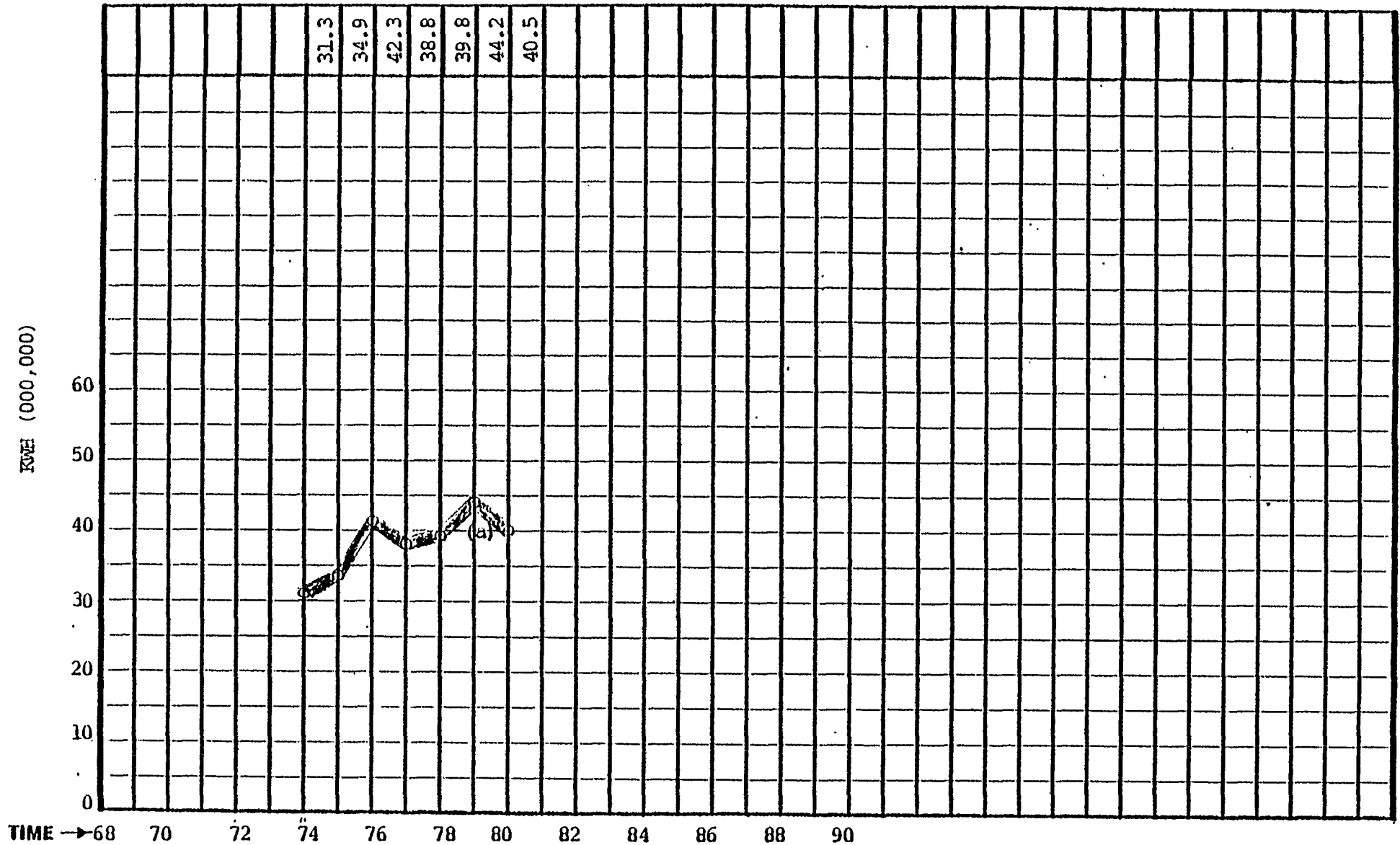
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With _____

Date 8/26/80

Sheet 1 of 1



Notation
References

a Base on first 4 months usage
of 40, 462,953

a
f
g

TITLE: Electrical Usage

SOURCE: Energy Management Utility Records

ELECTRICAL POWER USAGE - KWH/YEAR

	1974	1975	1976	1977	1978	1979	1980
KWH	31,316,444	34,961,218	42,282,538	38,830,064	39,828,921	44,201,247	40,462,953 ⁽¹⁾

(1) Base on first four (4) months usage.

HISTORICAL PLATEN

DATA

DATA RECORD

Plant NASSCO

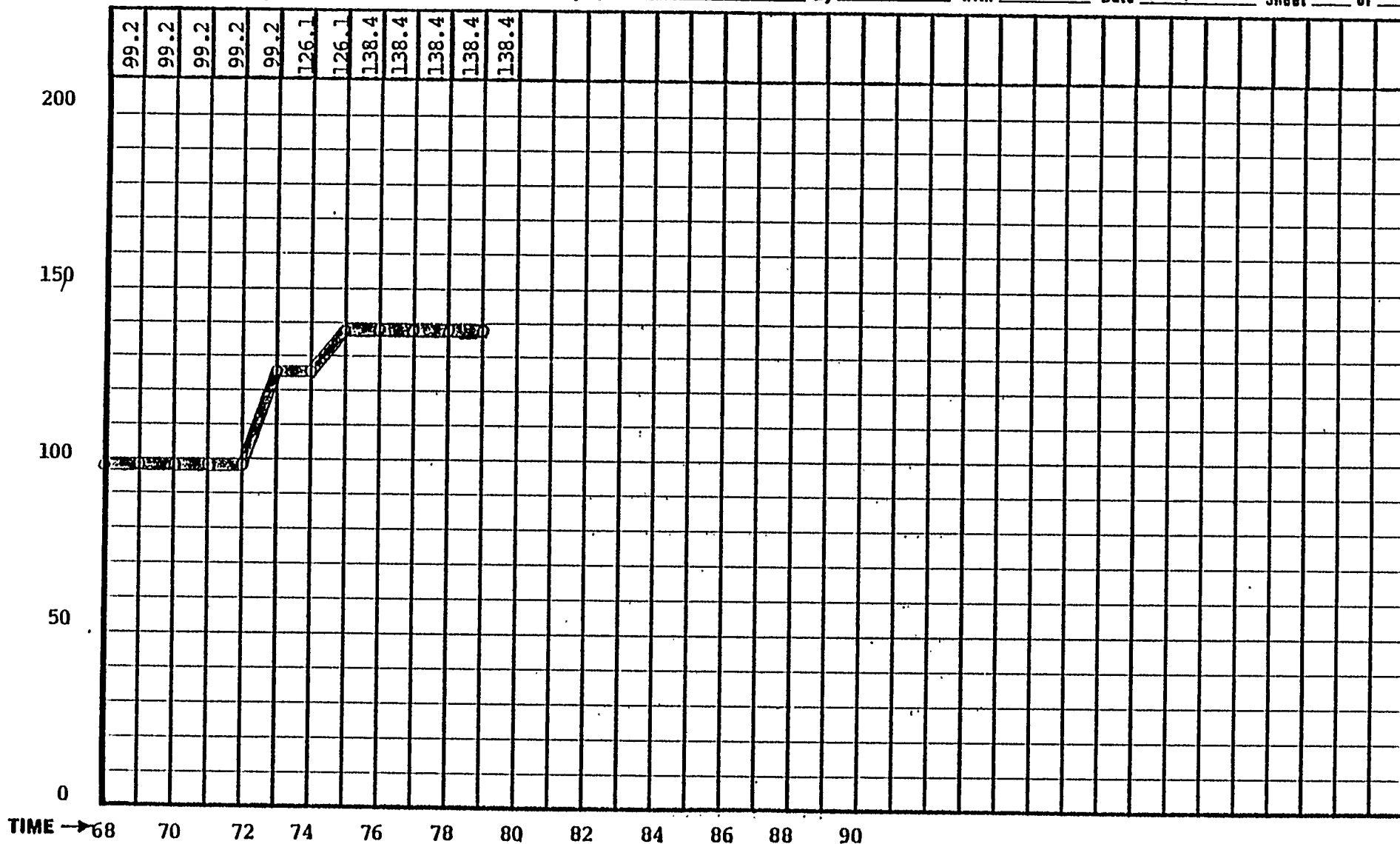
Project LREP

By J. Ruecker With _____

Date 8/20/80

Sheet 1 of 1

PLATEN AREA (000 SQ. FT.)



TIME → 68 70 72 74 76 78 80 82 84 86 88 90

Notation
References

a		e		TITLE: Platen Area (1-9)
b		f		
c		g		SOURCE: Facilities plot plan.
d		h		

RMA-358

RICHARD MUTHIER & ASSOCIATES

KANSAS CITY, MO.

(MAY BE REPRODUCED FOR IN-COMPANY USE PROVIDED ORIGINAL SOURCE IS NOT DELETED.)

NOSSCO

WM-MANUAL

Code

WM

Date 8/22/80

Sign. G. L. Bradsh

Page 1 of 1

SECTION 3 - FACILITIES & EQUIPMENT

3.2 FACILITIES

* PLATEN AREAS

PLATEN NO.	AREA SQ. FT.	SIZE (L x W)
1	43,450	790' x 55'
2	23,672	538' x 44'
3	6,077	155' x 43'
4	9,918	171' x 58'
5	15,222	354' x 43'
6	15,222	354' x 43'
7	6,240	104' x 60'
8	6,322	109' x 58'
9	12,255	215' x 57'
TOTAL AREA	138,378	PLANNED EXTENSION 160'

BERTHING

DATA

September 9, 1980

BERTHS

For the purpose of long range facility planning the berths are categorized by intended activity.

* Effective Outfitting Berths

2, 4, 5, and 6

Outfitting berth requirements have been developed in relationship to equivalent ships. At present .75 berths is required for one equivalent ship. With the implementation of improved outfitting techniques it is projected that by 1990 .70 berths per one equivalent ship will be required.

1980 outfitting berthing requirements are 4.5 berths for six (6) equivalent ships.

1981 outfitting berthing requirements will be 6.0 berths for eight (8) equivalent ships.

In order to handle the 1981 outfitting berthing requirements double berthing will be required at Berths 2 and 6, plus considerable repositioning of ships during the outfitting cycle. It also would be possible to use Berths 9 and 10 if they are not utilized for repair work.

* Effective Repair Work Berths

1, 9, 10, and 3

Berths 9 and 10 would be the primary repair work berths with 1 and 3 as backup berths. Berth 1 is a short term berthing position due to launchings and Berth 3 possibly could be blocked by a ship at Berth 2.

* Remaining Berths

7 and 8

These berths are basically used for barges and are not suitable for outfitting or repair operations.

PARKING

DATA

September 9, 1980

PARKING

Parking requirements for NASSCO. have been based on the following logic:

* 1.6 Employees per car

1.6 is used depending on substantial number of employees using public transportation, otherwise 1.3 must be used.

* 260 sq. ft. per car

260 sq. ft. is used due to the majority of cars being small. If majority of cars. were large then 300 sq. ft. would be used. This includes parking plus all 'associated access space.

* 76% of employees on first shift

This is based on the current employment figures.
First shift 5,180, second shift 1,360, and third shift 280. Total employment 6,820.

* Parking requirement formula.

$$\frac{6,820 \text{ Total Employment} \times .76\% \text{ first shift}}{1.6 \text{ employees per car}} \times 260 \text{ sq. ft./car}$$

$$\div 43,560 \text{ sq. ft.} = 19.3 \text{ acres.}$$

* Current parking is 11.9 acres, therefore, another 7.4 acres is required to solve the parking problem.

HISTORICAL ACREAGE

DATA

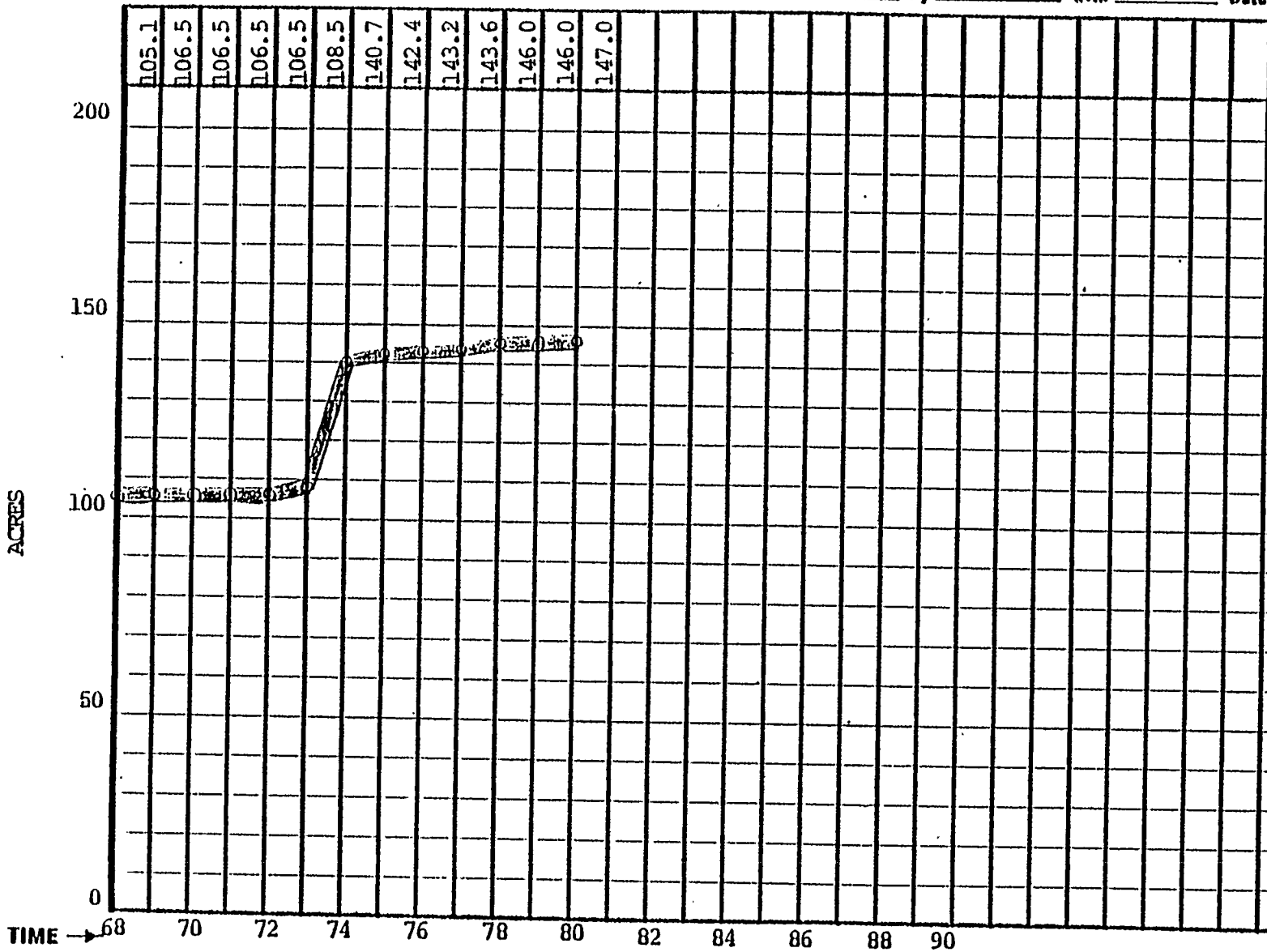
DATA RECORD

Plant NASSOO

Project LRFP

By J. Ruecker With _____

Date _____



Notation References	a		TITLE: Total Acreage Lega
	b		
	c		
	d		
			SOURCE: LRFP Book-I

August 1980

ACREAGE LEGALLY CONTROLLED

	1968	1969	1970	1971	19.72	1973	1974	1975	1976	1977	1978	1979	1980
Main Production Facility	68.5	60.5	68.5	68.5	68.5	68.5	79.7	77.5	78.3	78.4	78.4	78.4	78.4
Water Area	28.2	28.2	28.2	28.2	28.2	28.2	45.7	45.7	45.7	45.7	45.7	45.7	45.7
Parking	6.7	8.1	8.1	8.1	8.1	8.1	9.4	11.6	11.6	11.9	11.9	11.9	11.9
out of Yard Facilities	1.7	1.7	1.7	2.3	2.3	3.7	6.9	7.6	7.6	7.6	10.0	10.0	11.0
TOTAL ⁽¹⁾	105.1	106.5	106.5	106.5	106.5	108.5	140.7	142.4	143.2	143.6	146.0	146.0	147.0

(1) Total will differ from data on Std. Form 17 due to method of Measurement and calculation.

FACILITY FOOTPRINT

August 1980

FACILITIES	SEC . PROD.	PRI . PROD.	TRANS.	OFFICES	SER.& SUPP.	PARK.	STOR.	TOTAL
Permanent Buildings	3,716	184,079		95,226 ⁽²⁾	15,724 ⁽²⁾		293,382 ⁽²⁾	592,127 ⁽²⁾
Portable Buildings	4,265	8,924		4,482	2,748		1,512	21,931
Trailers				51,892				51,892
Building Dock		166,600						166,600
Building Ways		252,900						252,900
Drydock								
Blue-Sky Operations	156,194	410,349	570,600		34,075	520,146	1,561,636	3,253,000
TOTAL	164,175	1,022,852	570,600	151,600	52,547	520,146	1,856,530	4,338,450

Notes; (1) Includes 5' perimeter clearance.

(2) Allowed first floor activity only.

BY: J. R. Ruecker
Facilities & Industrial
Engineering Department

August 1980

BACKUP FOR NASSCO FACILITY FOOTPRINT

BLDG.	SEC. PROD.	PRI. PROD.	TRANSP.	OFFICES	SERVICE & SUPP.	PARK.	STOR.	TOTAL
1				- 2,396				2,396
5				266				266
6				- 4,120				4,120
8				-33,196				33,196
11		760						760
15				-17,850				17,850
26		- 2,518		- 2,401				4,919
29					-6,003			6,003
45		-11,088						11,088
51				-14,960				14,960
62				-450	-5,159		-2,931	8,540
66		-5,241		-7,167				12,408
73							- 400	400
TOTAL	0	19,607	0	82,806	11,162	0	3,331	116,906

Data list above is to be subtracted from NASSCO'S facility utilization chart to generate NASSCO'S facility footprint.

Footprint only allows for first floor activity of multi-store buildings.

by: J. R. Ruecker
Facilities & Industrial
Engineering Department

FACILITY" UTILIZATION

FACILITIES	SEC . PROD .	PRI. PROD.	TRANS.	OFF ICES	SER. & SUP.	P
Permanent Buildings	3,716	203,686		178,032	26,886	
Portable Buildings	4,265	8,924		.4,402	2,748	
Trailers				27,682		
Building Dock		166,600				
Building Ways		252,900				
Drydock		20,644				
Blue-Sky operations	156,194	410,349	570,600		34,075	52
TOTAL	164,175	1,063,103	570,600	210,196	63,709	52

BY: J. R. Ruecker
Facilities & Industrial
Engineering Department

FACILITY UTILIZATION BY ACTIVITY

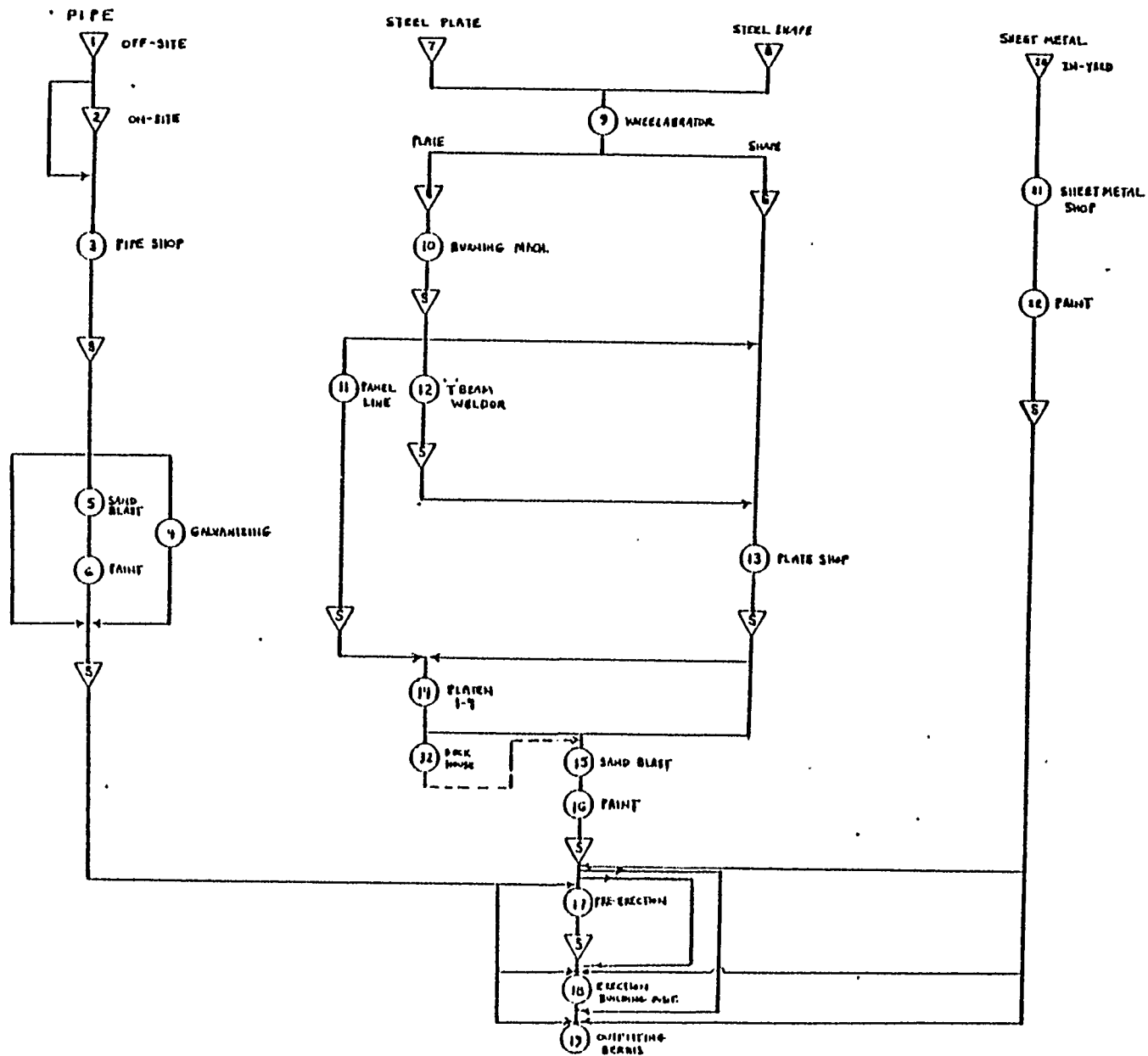
August 1980

		1974	1975	1976	1977	1978	1979	1980
PRODUCTION	Sq. Ft.	1,039,328	1,049,078	1,112,249	1,112,249	1,117,549	1,133,471	1,227,278
	Acres	23.9	24.1	25.5	25.5	25.7	26.0	28.2
TRANSPORTATION	Sq. Ft.	517,100	517,100	570,600	570,600	570,600	570,600	570,600
	Acres	11.9	11.9	13.1	13.1	13.1	13.1	13.1
OFFICE	Sq. Ft.	119,524	144,804	147,378	163,818	166,638	185,814	210,196
	Acres	2.7	3.3	3.4	3.8	3.8	4.3	4.8
SERVICE & SUPPORT	Sq. Ft.	62,577	62,577	65,702	65,702	65,702	63,597	63,709
	Acres	1.4	1.4	1.5	1.5	1.5	1.5	1.5
PARKING	Sq. Ft.	410,677	504,052	504,052	518,052	518,052	518,052	520,146
	Acres	9.4	11.6	11.6	11.9	11.9	11.9	11.9
STORAGE	Sq. Ft.	1,426,073	1,583,521	1,828,869	1,812,429	1,914,949	1,913,859	1,859,861
	Acres	32.7	36.4	42.0	41.6	44.0	43.9	42.7
TOTAL	Sq. Ft.	3,575,279	3,861,132	4,228,850	4,242,850	4,353,490	4,385,393	4,451,790
	Acres	82.0	88.7	97.1	97.4	100.0	100.7	102.2

MATERIAL FLOW
DIAGRAM

MATERIAL FLOW BY ACTIVITY CENTER

AUG. 1980



DOMINANT CONSIDERATIONS

DOMINANT CONSIDERATIONS

(Identification & Dominance Rating)

Plant **NASSCO** Project **LRFP**
By **J. Ruecker** With **T. Roach**
Date **9/9/80** Page **1** of **3**

EXISTING		Mark "X" if beyond control of company plant Dominance rating		FUTURE (through year 2005)		Mark "X" if beyond control of company plant Dominance rating	
E S X C I A	1 San Diego Bay blocks expansion to the south.	O	X	1 No change.	O	X	
	2 Freeway I-5 1/4 mile north of the site.	E	X	2 Would restrict main site expansion to the north.	E	X	
	3 Delta Trucking blocks expansion to the west.	A		3 Possible future acquisition.	A		
	4 Southwest Marine blocks expansion to the west.	E		4 Possible acquisition Delta's lease runs out in 1987.	E		
	5 Navy Base north of Chollas Creek blocks expansion to the east.	E	X	5 Possible future acquisition.	E	X	
	6 Navy Base @ 32nd Street blocks expansion to the east.	E	X	6 No chance of future acquisition.	E	X	
	7 Limited public bus service (a)	O	X	7 Unknown.	O	X	
	8 Commuter train will provide another means of transportation. (b)	I	X	8 Increased usage will reduce parking lot requirements.	I	X	
	9 Bike path to provide bike route around bay. (c)	I	X	9 No change.	I	X	
	10 Navigational restrictions-Coronado Bridge, Channel depth.	I	X	10 Additional spurs possible.	I	X	
R P N H A M O S I C L A	1 Permitting agencies requirements. (d)	E	X	1 Possibility of more stringent restrictions.	E	X	
	2 Environment requirements. (e)	E	X	2 Possibility of more stringent restrictions.	E	X	
	3 Safety requirements - OSHA, CALOSHA, etc.	E	X	3 Possibility of more stringent restrictions.	E	X	
	4 Governmental agencies requirements - Local, State and Federal.	E	X	4 Possibility of more stringent restrictions.	E	X	
	5 City Fire Protection.	O	X	5 No change.	O	X	
	6 Solid waste disposal restrictions.	O	X	6 No change.	O	X	
	7 Labor market - unskilled and semi-skilled available.	O	X	7 No change.	O	X	
	8 U. S. Naval Base located in San Diego.	E	X	8 Possibility of fleet being relocated.	E	X	
	9 Regulations by Warad.	E	X	9 Possible changes.	E	X	
	10 Political distribution of Naval contracts (H/S and Repair).	E	X	10 Possible changes.	E	X	
P H Y S I C L A	1 77 acre main site.	A	O	1 Possible increase.	A	O	
	2 Tidelands storage.	O	X	2 Possible loss of this area due to competitors req.	O	X	
	3 Chula Vista storage.	O		3 No change.	O		
	4 Fed-Mart storage.	O		4 No change.	O		
	5 Reasonable level land. (f)	O		5 No change.	O		
	6 Off street parking.	O		6 Additional acquisitions.	O		
	7 Limited water front.	O		7 More w/f by shop relocation and acquisitions.	O		
	8 Water depth at building and repair positions.	O		8 Dredging permits possible.	O		
	9 Building Dock. (g)	O		9 Changes possible.	O		
	10 Sliding ways.	O		10 Changes possible.	O		
R P H Y S I C L A	1 Available capital.	A		1 Will be determined by market conditions.	A		
	2 Plant organization	A		2 No change.	A		
	3 Personnel considerations - company-provided benefits.	A		3 Probable increase in benefits.	A		
	4 Union demands - restroom, lunchrooms, lockers, etc.	A		4 Probable increase in amenities.	A		
	5 Site appearance.	A		5 Color scheme and new image under consideration.	A		
	6 Employee morale.	A		6 Improved.	A		
	7			7			
	8			8			
	9			9			
	10			10			

Reference Notes

- Route 132 plus feeder routes.
- Commuter train to run from Mexican border to Downtown S. D. w/a stop @ 28th St.
- Will lose 36 on street parking spaces west of 28th Street on Harbor Drive.
- Includes air and water pollution, sound abatement, etc.
- Includes tidelands, Health Dept., C. O. E., Port District, Coastal Com. & zone
- Causes drainage problem.
- Used mainly for new construction, could be used for limited repair work.

Instructions

- Determine what major considerations affect the existing facilities and future facilities plans.
- Record these in the appropriate section.
- Rate each consideration for its relative effect or influence on the project's facilities planning.
- Mark "X" where consideration is beyond the control of the company plant.

Dominance Rating - Effect on Facilities Planning

- A - Abnormally High
- E - Especially Important
- I - Important
- O - Ordinary
- U - Unimportant

DOMINANT CONSIDERATIONS (Identification & Dominance Rating)

Plant **NASSCO** Project **LRFP**
By **J. Ryecker** With **T. Rqach**
Date **9/8/80** Page **2** of **3**

EXISTING		Mark "X" if beyond control of company plant Dominance rating		FUTURE (through year 2005)		Mark "X" if beyond control of company plant Dominance rating	
P H Y S I C A L	1	Limited RR access; two spurs.		1	No change.		
	2	On-street parking allowed.		2	City may prohibit on-street parking.	X	X
	3	Airport five (5) miles from main site.		3	Possible relocation of airport.	X	X
	4	Energy requirements.		4	Availability depends on suppliers capacity for the area.	X	X
	5	Utility interface. (a)		5	Use of the latest technical advances.	X	X
	6	Climatic conditions conducive to shipbuilding activities.		6	No change.	X	X
	7	Earthquakes.		7	Possibility of more stringent building codes.	X	X
	8			8			
	9			9			
	10			10			
H A R B O R	1	Harbor Leasing/101 Harbor Planning Association.		1	Possible opposition to the future growth of NASSCO.	X	X
	2	Mod. to heavy industrial support in immediate area. (b)		2	No change.	X	X
	3			3			
	4			4			
	5			5			
	6			6			
	7			7			
	8			8			
	9			9			
	10			10			
P H Y S I C A L	1	Limited berthing positions.		1	Increase if large drydock is purchased.		
	2	Floating drydock - limited cap. 2800 ton lease runs out in 1981.		2	Possible acquisition of larger dock (NASSCO owned).		
	3	Graving drydock - limited to short term repair. (c)		3	Possible additional participants in the use of the dock.		
	4	Production shops capacities and location. (d)		4	Possible relocation and/or increased capacity.		
	5	Platforms		5	Possible upgrade.		
	6	Offices capacity limited-now using 27,680 sq. ft. trailers.		6	Probable relocation.		
	7	Warehousing - under roof.		7	Probable relocation.		
	8	Warehousing - Blue sky.		8	Maintain in-yard space.		
	9	Storage - support equipment.		9	No change.		
	10	Basement restrictions.		10	No change.		
H A R B O R	1			1			
	2			2			
	3			3			
	4			4			
	5			5			
	6			6			
	7			7			
	8			8			
	9			9			
	10			10			

Reference Note:

- Example - Communication systems.
- Solution to lack of support would be upgrade and expand machine shop.
- Share the dock with Campbell's and Triple A - 90% Navy contracts.
- Carpenter Shop, Machine Shop, Sheetmetal Shop, Foundry, etc.

Instructions

- Determine what major considerations affect the existing facilities and future facilities plans.
- Record them in the appropriate section.
- Rate each consideration for its relative effect or influence on the present facilities planning.
- Mark "X" where consideration is beyond the control of the company plant.

Dominance Rating - Effect on Facilities Planning

- A - Absolutely High
E - Especially Important
I - Important
O - Ordinary
U - Unimportant

DOMINANT CONSIDERATIONS

(Identify those Dominant Rating)

Plan NASCO
By J. Ruecker
Date 9/8/80

Project LRFP
Wm. T. Roach
Page 3 of 3

Mark "X" if beyond control of company plan
Dominant rating

FUTURE (through year 2005)

Mark "X" if beyond control of company plan
Dominant rating

EXISTING

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- 1 Gantry crane load restrictions, (a)
- 2 Inprocess storage.
- 3 Material handling systems (cranes, forklifts, conveyors, trucks, etc)
- 4 Electrical capacity of berths. (b)
- 5 Yard utility distribution system.
- 6 NASCO requirements due to site being landfill.
- 7 Yard communication systems.

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- 1 Additional capacity anticipated.
- 2 No change.
- 3 Improvements anticipated.
- 4 Possible upgrade.
- 5 Centralization and standardization.
- 6 No change.
- 7 Improvements anticipated.

E
I
E
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O

Reference Notes

- 1 Gantry #2, #3, #4, and #5 are leased from Harad on a year to year basis.
- 2 Capacity may not meet Navy requirements.

Instructions

1. Determine what factors affect the existing facilities and future facilities plans.
2. Record these in the appropriate section.
3. Rate each consideration for its relative effect or influence on the project's facilities planning.
4. Mark "X" where consideration is beyond the control of company plan.

Dominance Rating

Effect on Facilities Planning

- A - 21 - Extremely High
- E - 16 - Extremely Important
- I - 11 - Important
- O - 6 - Ordinary
- U - 1 - Unimportant

SPACE BALANCE

DATA

SPACE BALANCE FOR PLANNING AND CONTROL

Description of facilities to which this sheet is applicable: _____

Based on these operating times: TWO SHIFTS (72.5 HRS/WK)

Line No.	Description of facilities to be added, deleted or relocated.	When to be available	AMOUNT OF SPACE (In SQUARE FEET)			ALLOCATION BY DOMINANT TYPE OF USE or CLASS of SPACE *							
			Add	Delete	Cumulative	T/C PRODUCTION	%	SECONDARY	%	PRIMARY	%	TRANSPORTATION	%
			a	b	c	d	e	f	g	h	i	j	k
			Existing or carried forward amount			Target	26.0	Target	3.5	Target	22.5	Target	12.0
	SHOULD HAVE NEW CYCL. PARKING				4,451,717	1,227,215	27.5	164,112	3.6	1,063,103	23.7	570,600	12.8
1	ADD PARKING NEEDED NOW	80	320,000		4,772,000	1,227,000	25.7	164,000	3.4	1,063,000	23.3	571,000	12.0
2													
3													
4													
5	BASED ON 77 EQUIV SHIP REQUIREMENTS	82			6,011,000	1,563,000	26.0	210,000	3.5	1,353,000	22.5	721,000	12.0
6													
7													
8													
9													
10	BASED ON 8.5 EQUIV SHIP REQUIREMENTS	85			6,248,000	1,630,000	26.0	220,000	3.5	1,410,000	22.5	752,000	12.0
11													
12													
13													
14													
15	BASED ON 10.3 EQUIV SHIP REQUIREMENTS	90			6,559,000	1,706,000	26.0	230,000	3.5	1,476,000	22.5	787,000	12.0
16													
17													
18													
19													
20	BASED ON 11.7 EQUIV SHIP REQUIREMENTS	9000			6,373,000								
21													
22													
23													
24													
25													

*Explanations:
T/C - Type or class of space

Reference Notes: a. EXISTING PLAN IN EL 25 INDICATED
b. Primary allocations underlined in RED.

9
h
)

Description of facilities to which this sheet is applicable:

NATIONAL STEEL AND SHIPBUILDING CORP.

Plant

By J. R. RUECKEL

Date SEPT 1964

Proj

With

Sheet

ALLOCATION BY DOMINANT TYPE OF USE or CLASS of SPACE *													CAPACITY (units, m)
PERMANENT	%	TEMP.	%	SERV & SUPPORT	%	STORAGE	%	IN YARD	%	OFF-SITE	%	PARKING	
Target	4.4	Target	0.1	Target	1.3	Target	38.8	Target	30.8	Target	0	Target	12.4
178,032	4.0	32,164	0.7	63,709	1.4	1,859,861	41.3	1,371,308	31.3	468,553	10.5	520,146	11.7
205,000	4.3	VARIO PRADIN OFFICES 5,000	0.1	64,000	1.3	1,860,000	31.0	1,371,000	29.2	469,000	7.8	840,000	17.6
265,000	4.4	6,000	0.1	78,000	1.3	2,332,000	38.8	2,332,000	38.8	-0-	0	1,046,000	12.4
276,000	4.4	6,000	0.1	81,000	1.3	2,432,000	38.8	2,432,000	38.8	-0-	0	1,091,000	12.4
288,000	4.4	7,000	0.1	85,000	1.3	2,545,000	38.8	2,554,000	38.8	-0-	0	1,141,000	12.4

SPACE REQUIREMENT

CONVERSION DATA

SPACE REQUIREMENTS -- CONVERTING

Activity Name	Unit	Area Now Uncovered (sq. ft.)	+ or - Adjst. (sq. ft.)	Should Have Now (sq. ft.)	Basis (year, period, quantity)		Basis (year, period, quantity)		Basis (year, period, quantity)		Basis (year, period, quantity)	
					1	2	3	4	5	6	7	8
PIPE STORAGE OFF-SITE		94,443	-94,443	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
PIPE STORAGE ON-SITE		26,600	+94,443	121,043	+31,000	152,000		+6,000	158,000		+5,000	163,000
PIPE SHOP		23,150	+5,000	49,990	+12,000	62,000		+3,000	65,000		+3,000	68,000
GALVANIZING		1500	+2,000	5300	2,000	7,000		+1,000	8,000		-0-	3,000
PIPE SAND BLAST		2,500	-2,500	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
PIPE PAINTING		2,500	-2,500	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
PLATE STORAGE		182,125	-0-	182,125	-0-	182,000		-0-	182,000		-0-	182,000
SHAPE STORAGE		75,937	-0-	75,937	+25,000	101,000		+5,000	106,000		-0-	106,000
WHEELABRATOR		2,257	-0-	2,257	-0-	2,000		-0-	2,000		-0-	2,000
BURNING MACH.		24,740	+4,000	32,070	+11,000	43,000		-0-	43,000		+3,000	46,000
PANEL LINE		18,750	-0-	18,750	-0-	19,000		-0-	19,000		+3,500	54,000
T-BEAM WELDER		6,875	-0-	6,875	-0-	7,000		-0-	7,000		-0-	7,000
LATE SHOP (F-10) 22,163		86,590	+6,000	108,758	+34,000	139,000		-0-	139,000		+5,000	144,000
PLATE'S 1-3		137,378	+9,000	146,378	+40,000	186,000		-0-	186,000		-0-	186,000
SAND BLAST		97,300	-0-	97,300	+26,000	123,000		+6,000	129,000		+5,000	134,000
PAINT		1,437	+50,000	96,274	+26,000	122,000		+6,000	128,000		+5,000	133,000
PRE-ERECTION		54,163	-0-	54,163	+50,000	104,000		+10,000	114,000		+6,000	120,000
ERECTION BUILDING MATERIALS		419,500	-0-	419,500	-0-	420,000		-0-	420,000		-0-	420,000
PIPEFITTING 20000		NATER										
STEEL METAL SHOP		18,625	-18,625	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
STEEL METAL SHOP		24,192	+27,375	61,557	+16,000	78,000		-0-	78,000		-0-	78,000
M-PAINT AREA		8,750	-8,750	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
ELECTRICAL SHOP		7,540	-0-	7,540	+3,000	11,000		-0-	11,000		-0-	11,000
AC-MIN. SHOP		24,542	-0-	36,542	+10,000	47,000		+2,000	49,000		+2,000	51,000
FOUNDRY		100,893	-18,838	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
MAINTENANCE		33,000	+5,000	21,675	+6,000	28,000		+1,000	29,000		+1,000	30,000
REFRIGERATOR SHOP		14,261	+2,000	16,261	+5,000	21,000		+1,000	22,000		+1,000	23,000
ENGINE SHOP		23,953	-0-	23,953	-0-	24,000		-0-	24,000		-0-	24,000
DIESEL ASST		-0-	+20,000	20,000	+6,000	26,000		+2,000	28,000		+2,000	30,000
HEAD SHOP		11,850	-0-	11,850	-11,350	-0-	-0-	-0-	-0-	-0-	-0-	-0-
4-BLOCK ASST		-0-	+49,680	49,680	+19,720	69,000		+52,000	121,000		+21,000	142,000
DECK HOUSE ASST		-0-	+50,000	50,000	+13,000	63,000		+2,000	65,000		+2,000	67,000
ACR CASING		-0-	+20,000	20,000	+5,000	25,000		+1,000	26,000		+1,000	27,000
SPENDING IN-SITE BUILDING MATERIALS		75,258	+374,110	329,417	+180,000	710,000		+28,000	738,000		+35,000	773,000
WELDING OFF-SITE BUILDING MATERIALS		106,678	-374,110	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
IN-PROCESS STORAGE		14,300	-0-	815,226	+299,000	1,114,000		+43,000	1,157,000		+52,000	1,209,000
SC. & RM. STORAGE		27,161	-0-	27,161	+7,000	34,000		+1,000	35,000		+2,000	37,000
OFFICES - PERM.		178,032	+27,682	205,714	+60,000	265,000		+11,000	276,000		+14,000	290,000
OFFICES - TEMP.		32,164	-27,682	4,482	+2,000	7,000		-0-	7,000		+1,000	8,000
PARKING - EMPL.		502,546	+319,454	822,000	+213,000	1,035,000		+45,000	1,080,000		+60,000	1,140,000
PARKING - VISITED		17,600	-0-	17,600	+5,000	23,000		+1,000	24,000		+1,000	25,000
TRANS. - ROADWAYS		570,600	-0-	570,600	+150,000	720,000		+30,000	750,000		+35,000	785,000
OTHER SERVICES		40,500	+2,500	43,000	-0-	43,000		+9,000	52,000		+7,000	59,000
EXCL. SHEDDING TOTAL					451,707							
ADD PARKING					317,352							
TOTAL					4250355		6111000		6168000		6263000	

L R F P
INDUSTRY SURVEY

BY:
T. S. ROACH
J. R. RUECKER

MAY/JUNE 1980
